COTTON

Volume 83
Number Two
Twenty Cents a Copy

DECEMBER, 1918

Published Monthly by
W. R. C. Smith Publishing Co.
Dalton, and Atlanta, Ga.

SUPERCONES

Descriptive pamphlet on request of the

NEW No. 80 CONE WINDER

IN THE SUPERCONE we have successfully modeled a supply for knitting machines which not only contains more material than any style of package previously produced, but also, by reason of its progressive build, insures a uniform delivery of material heretofore unequaled by either cone or bottle bobbin. The SUPERCONE is EIGHT INCHES long, with a possible maximum diameter of TEN INCHES. The net weight of a full-sized package ranges from FOUR to SIX pounds, depending upon the material wound. A cone of this size presents the greatest advantages for coarse counts, including sweater yarn.

UNIVERSAL WINDING COMPANY, BOSTON

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1918
PERIODICAL DIVISION

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NOW

is the time to plan
for replacing Common looms
with

NORTHROP

Trade-Mark

LOOMS

WHATEVER may be the profits of mills having Common looms today,
they would have been much greater if equipped with Northrop looms

The mill having Common Looms that does not lay aside a part of its war profits to provide a Northrop Loom equipment **is failing**
in its duties to its Stockholders

DRAPER CORPORATION

HOPEDALE MASSACHUSETTS

Southern Office
188 South Forsyth Street Atlanta Georgia

Copyright 1917 by Draper Corporation

NORTHROP
TRADE-MARK
LOOM REPAIRS

OUR loom repairs are made from the same patterns as the parts that they replace on the Northrop looms; they are machined with the same tools, jigs and fixtures; they are made from the same high grade materials

Repairs made under our conditions **ARE** better than those made in job foundries and shops and without our interest in the working of the Northrop loom

Draper Corporation service goes with our goods

Our prices for loom and other repairs are low

We carry several hundred tons of Finished Loom repairs in stock for the convenience of our customers

DRAPER CORPORATION
HOPEDALE MASSACHUSETTS

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188 South Forsyth Street Atlanta Georgia

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QUALITY PAPER SERVICE

Send For Samples of These Grades

QUALITY PAPER SERVICE

AMMONOOSUC

White, Blue, Buff, Green and Salmon.

SPECIALLY MADE FOR TEXTILE WRAPPERS AND OTHER PURPOSES REQUIRING A HIGH GRADE WRAPPING PAPER.

24 x 36—40 lbs. and heavier.

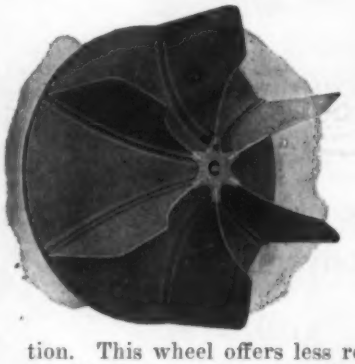
A MANILA
B ENVELOPE MANILA
C MANILA
OSCO FIBRE
K FIBRE
OILED PAPERS
WAXED PAPERS

Manufactured by

ODELL MANUFACTURING COMPANY

Paper and Pulp Mills
Groverton, N. H.

527 FIFTH AVENUE, NEW YORK



Here's the Fan Wheel

That Has Made These Reversible Fans So Universally Successful in Cotton Mills

This fan wheel is the secret of the success of our reversible fans for conveying Cotton, Wool, Rags and Stringy Material of any kind.

This fan wheel is constructed with a cone-shape back of cast iron with sheet steel blades cast solid. Note the short overhang, which makes the fan run smoothly without vibration. This wheel offers less resistance to material passing through than any other wheel. It handles long, stringy material just as good as short material or lint.

And it's reversible.

The fan is built solid and runs without a tremor at maximum speed. No buckling of suction at high speed. No rivets to work loose. Universal adjustment of bearings, not simply up and down.

Made in any size, from 30 to 60 inch.

Folder R. F. explains fully. Ask for it today. Our catalogs No. 65 and 67 show complete line of fans and blowers for every class of work.

We have a large stock of repair parts which can be shipped at a moment's notice.

BUILT RIGHT RUN RIGHT

The New York Blower Co.

Main Office: Archer Ave. and Canal Street, CHICAGO, ILL.

Works: BUCYRUS, OHIO.

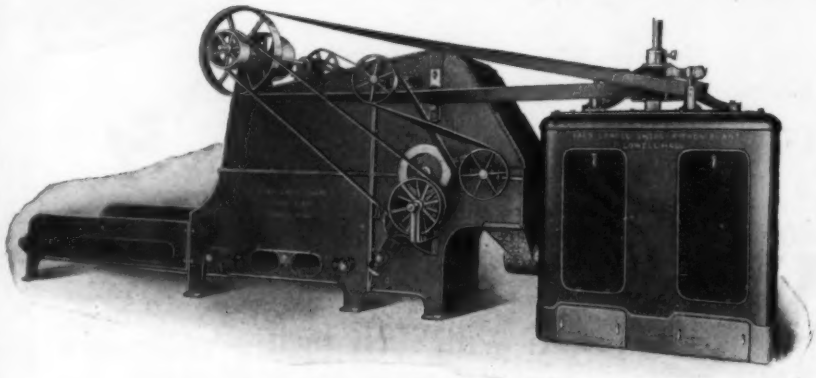
Leader-News Bldg. Cleveland, O. | Ridge Arcade Bldg. Kansas City, Mo. | 502 Plymouth Bldg. Minneapolis, Minn. | 303 B. F. Jones Bldg. Pittsburgh, Pa. | 370 Central Ave. East Orange, N. J.

WE stand ready, with every effort, and with such facilities as our own shuttle block mills, metal products department, and modern organization, to cooperate with the textile industry in making easy and quick the attainment of looms to finest production of goods to be woven for the coming increased consumption.

Shambow Shuttle Company
Woonsocket, R. I.

SACO-LOWELL SHOPS

TEXTILE MACHINERY



OPENING EQUIPMENT

INCLUDING

Vertical Openers

WITH

BALE BREAKERS ATTACHED

SHOPS

BIDDEFORD, ME. LOWELL, MASS. NEWTON UPPER FALLS, MASS.

EXECUTIVE OFFICES

BOSTON, MASS.

ROGERS W. DAVIS, Southern Agent, CHARLOTTE, N. C.

BRANCH OFFICE, GREENVILLE, S. C.

AUTOMATIC DUCK LOOMS

We make automatic looms for
all manner of textile fabrics.
Plain or fancy, coarse or fine.

"IDEAL"

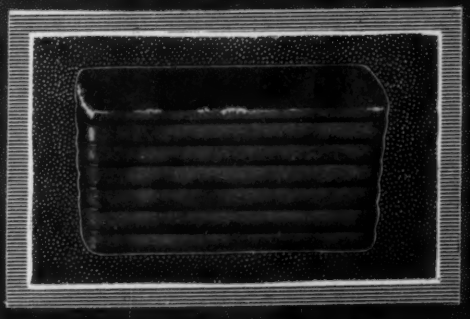
The Stafford Company

Readville, Mass.

Southern Office - - - Charlotte, N. C.

"IDEAL"

HIGH DENSITY COTTON BALING



CUMMINS' HORIZONTAL PRESS

CONDENSING into smaller space, more compact form—producing a cotton bale that will occupy less car room, less cargo space, greater ease in handling and improved wrapping and binding, is the achievement of Cummins' Horizontal End-Pressed Baling Press, the modern method of marketing the cotton crop of America.

56 Pounds Per Cubic Foot

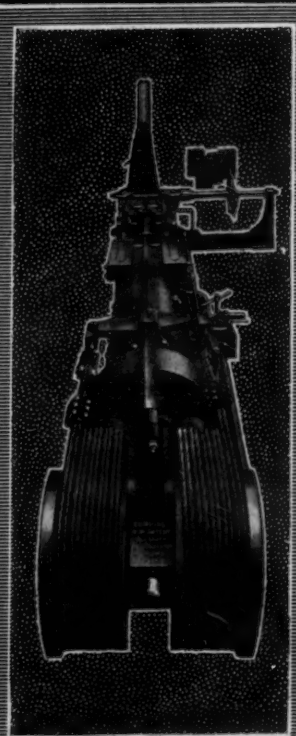
—is the density produced by this rapid baling press, which operates at a speed of about 70 finished bales per hour.

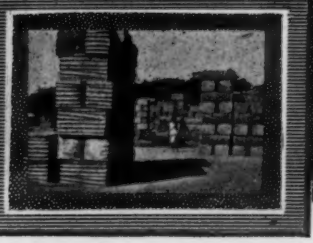
The picture above shows the bale as it comes from the press.

The illustration at the right is Cummins' New Patent Baling Press, and underneath, a group of bales ready for export.

Catalogue with full details will be mailed on request.

W. D. CRUMPTON
American Representative
29 Broadway, New York





DAVID BRIDGE & CO. Ltd.
MANCHESTER, ENG.

BLANKETS
Army
Navy

TOWELS
Hospital
Red Cross

LOOM
WITH
MAGAZINE

DUCK
Tent
Sail

UNIFORM CLOTH
Army
Navy

CROMPTON & KNOWLES LOOM WORKS,
WORCESTER, MASS.

Providence, R. I. Philadelphia, Pa. Paterson, N. J.
Alexander & Garsed, Charlotte, N. C., Southern Representative.

COTTON STORAGE

350,000 — BALES

HANDLED DURING SEASON

AMERICAN DOCK TERMINAL

CITY AND PORT OF NEW YORK

Lowest insurance and storage rates in the City and Port of New York obtained in modern concrete warehouses. Fully protected by Automatic Sprinklers. New York Cotton Exchange license. Bonded employees. Forty years' experience in Cotton Storage Business. Direct rail connection with all Trunk Lines. Rates on application to

AMERICAN DOCK COMPANY

Executive Office: **17 State Street, New York**

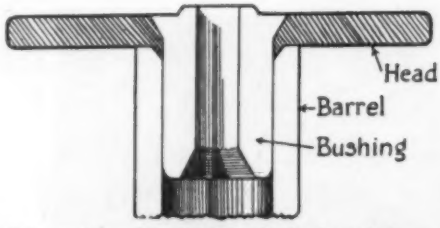
Also operating new warehouses of Pouch Terminal for

COTTON STORAGE

WHAT?

and the Answer—

To those not acquainted with the MACRODI FIBRE HEAD SPOOL, the question naturally arises what is this spool and what are its advantages.



This spool is a bushed spool with heads made from a specially prepared fibre and with a wooden barrel. The construction is patented.

Fourteen years of the hardest kind of mill use have absolutely demonstrated these features of the MACRODI FIBRE HEAD SPOOL.

DURABILITY—As the fibre heads are made from a specially prepared fibre which has no grain to it, as has wood, these heads will not chip, break, crack or warp. Consequently this spool is much more durable than the ordinary wooden spool.

ECONOMY—Scores of mill men have demonstrated to their own satisfaction that this spool saves them not only in actual spool breakage, but also in the attendant loss of yarn. The value of broken spools—as you know—is much less than the value of the yarn lost through broken spools. Careful figures kept over a period of years by some of the largest mills prove these facts beyond question.

ADDED TRAVERSE—The most radical feature of this spool is the added traverse made possible on account of the difference in thickness between the fibre heads and the heads of the ordinary wooden spool. The fibre heads are only one-quarter of an inch in thickness whereas the wooden heads are generally one-half inch in thickness. This difference in thickness may be added to the traverse of the MACRODI FIBRE HEAD SPOOL, giving you one-half inch longer traverse than on the wooden spool of the same length. To illustrate:—a wooden spool with 5" traverse is 6" over all, whereas the MACRODI FIBRE HEAD SPOOL 6" over all would have a 5½" traverse. This extra one-half inch traverse allows you to wind 10% more yarn on the MACRODI FIBRE HEAD SPOOL with 5½" traverse than on the wooden spool of corresponding outside dimensions. This added traverse means increased yardage, and often another wrap on the beam. Progressive mill men have found that the added traverse has enabled them to materially cut costs.

The operatives prefer the MACRODI FIBRE HEAD SPOOL as the heads are very smooth on the inside and the yarn does not catch or break in spooling and warping.

The economy and durability of the MACRODI FIBRE HEAD SPOOL, and the advantages of the increased traverse are facts proved to the satisfaction of hundreds of mill men throughout this country.

DELIVERIES—We made a specialty of prompt deliveries guaranteeing shipment in from two to four weeks after receipt of order.

Macrodi Fibre Co., Woonsocket, R. I.

MACRODI
Fibre Head Spools

Card Room Spindles Repaired

Worn or Broken Spindles re-topped or re-versed — ELECTRICALLY WELDED, bearings made full size and tops made to fit your flyer.

Spindles guaranteed not to break at weld—Prices reasonable.

Southern Spindle & Flyer Co., Inc.
CHARLOTTE, N. C.

Manufacturers, Overhaulers and Repairers of Cotton Mill Machinery.

W. H. Monty, Pres. & Treas.

W. H. Hutchins, Vice Pres. and Sec.

AMERICAN
SUPPLY COMPANY
PROVIDENCE, R. I.

MANUFACTURERS OF

Loom Harness,
Weaving Reeds,
Oak Tanned Leather
Belting, Strapping,
Etc.

We make a specialty of Harness for Warp Drawing Machines

NOTE—No orders too large for our capacity. None too small to receive careful attention.

Emergency Power—

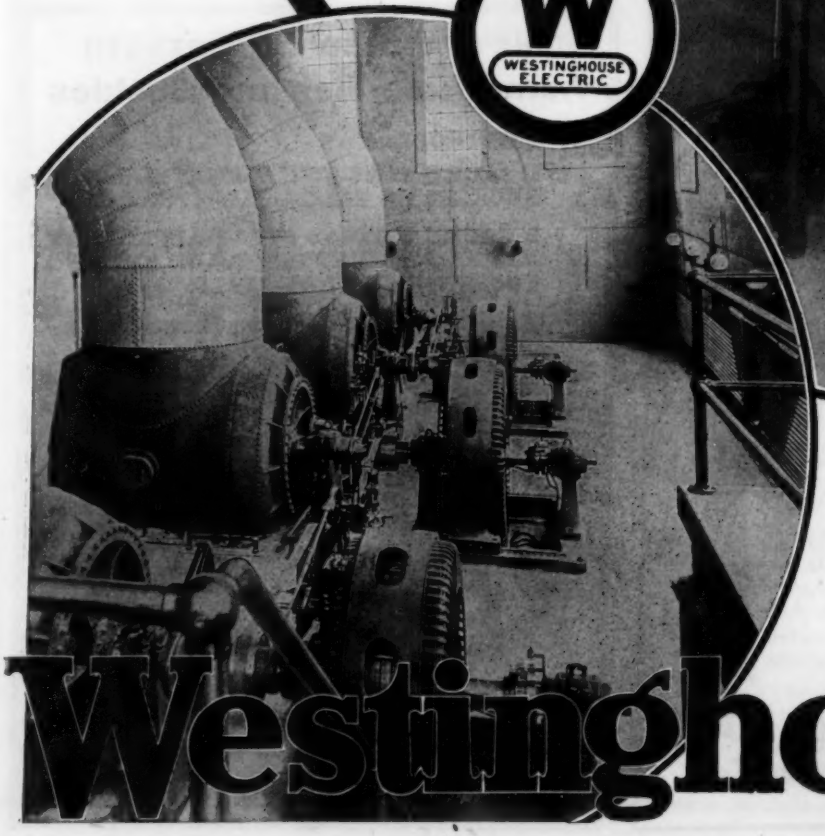
Re-development of the old, abandoned water power, as well as the new water power projects, offers the least expensive and shortest route to an independent source of electric power.

Westinghouse Water Wheel Generators are suitable for direct connection to vertical, as well as horizontal wheels; also for belting from horizontal wheels.

Thus you obtain with the minimum of time and expense, an abundant supply of cheap power, and, at the same time, render a valuable service to the Nation by conserving the fuel supply.

Westinghouse Electric & Manufacturing Co.,
East Pittsburgh, Pa.

Power Station of the Society For The Establishment of Useful Manufacturers, supplying a large part of the silk industry of Patterson, N. J.



W
WESTINGHOUSE ELECTRIC

Westinghouse

Few Will Fall Behind

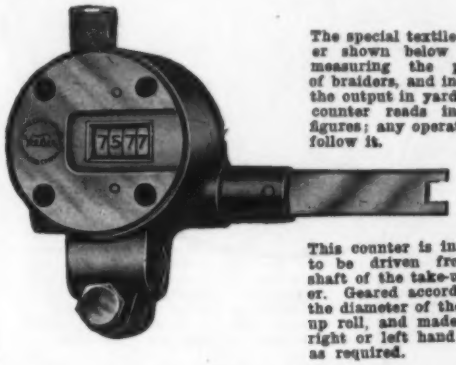
Once you establish a standard production-rate for a machine—a fair-efficiency-mark for the operative—few will fall behind.

Because producing less than the accepted standard indicates a "lying-down" on the job which no worth while operative will want charged against him.

Thus it helps guarantee a *consistently high* output when you count production and standardize it with

Veeder COUNTERS

It ensures nothing less than a full day's work will pass in return for a full day's pay.



The special textile counter shown below is for measuring the product of braiders, and indicates the output in yards. The counter reads in plain figures; any operator can follow it.

This counter is intended to be driven from the shaft of the take-up roller. Geared according to the diameter of the take-up roll, and made for a right or left hand drive, as required.

A similar model to the above can be had in a Loom Pick Counter (to record loom output in picks)—also in a Hank Counter, to record the output (in hanks) of machines where the product is ejected by rollers. These counters and others for textile-mill purposes may be seen in the Veeder booklet—copy sent gladly.

The Veeder Mfg. Co.

6 Sargeant Street Hartford, Conn.

The Palmer Adjustable Thread Guide

For Ring Spinning and Twisting Frames

Easily adjusted.

Extreme accuracy and permanence of setting.

Cheapest of them all.

Mail guide-block for free sample.

Patented and manufactured by

THE I. E. PALMER COMPANY

Middletown, - - - Connecticut

THE STANDARD OF STRENGTH

Acme Bale Ties and Buckles

TWO METHODS:

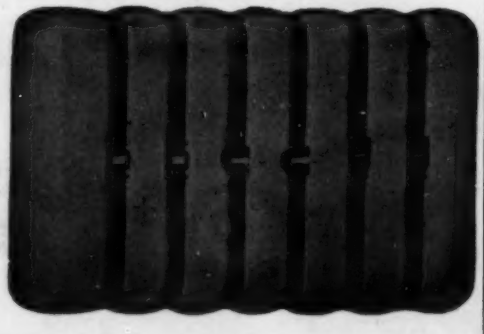
1. **ACME BALE TIES FIRMLY HELD BY BUCKLES AS BELOW ILLUSTRATED.**

2. **ACME SPECIAL STRAP APPLIED BY MEANS OF STRETCHING AND SEALING TOOLS WITH METAL SEALS.**

Both Methods Efficient and Economical.

SEND FOR CATALOG AND PRICES

SEVERAL STYLES OF BUCKLES



ACME STEEL GOODS CO., MFRS.

2840 Archer Ave. CHICAGO — Queen & Crescent Bldg. NEW ORLEANS.

10 Tift St., ATLANTA — 295 LaFayette St., NEW YORK

On Guard—Select-O-Phone

The readjustment period will be a very real exemplification of *the survival of the fittest.*

The two great outstanding features will be the demand for *Stability* and *Elimination of waste.*

Select-O-Phone invites and suggests immediacy of expression, a force whose economic value bulges large in securing results, in the routine of an executive's duties.

With the entire organization within four seconds of the executive's desk, morale peak is accomplished.

Have all your departments at your finger ends. Supply a means by which employees can get into immediate communication with you when needed. Eliminate the running from one department to another. Stay at your desk. Issue orders from there over the SELECT-O-PHONE. A turn of the dial, receiver to ear and you are in connection with your man. If he is not at his desk, ring the "General Call." That will find him if he is in the building. The select-O-Phone is the perfect means of inter-department communication.

One Turn of The Dial with one hand completes an instantaneous secret connection

Mr. H. P. Dixon, a gentleman with twenty years experience in telephony, is now in the South giving "no obligation" demonstrations in factories and offices of what this Automatic Interdepartmental Telephone and Factory Call System combined, will do for organizational efficiency.

Cut the coupon and mail it at once either to Mr. H. P. Dixon care Cotton, Atlanta, Ga., or to us direct.

We will accept your offer for a "no obligation" demonstration of Select-O-Phone.

Name .....

Address .....

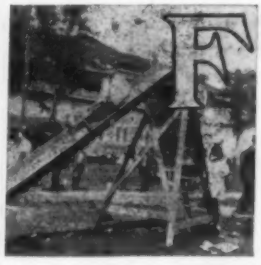
City .....

State .....

Meantime, send folder, "WHAT IT IS AND WHAT IT DOES."

The Screw Machine Products Corp.

Providence, R. I.

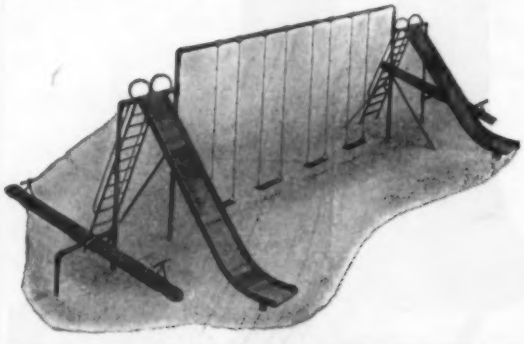


FUN-FUL Playground Apparatus

will help you solve your labor, community and general reconstruction problems.

Our line includes Swings, Slides, See-Saws, Ocean Waves, Giant Strides, Outdoor Gymnasia, and all necessary Athletic Goods.

More than **Seventy-Five Southern Cotton Mills** have recently purchased "Fun-Ful" Apparatus. Ask them if it pays. We will send list of customers if desired.



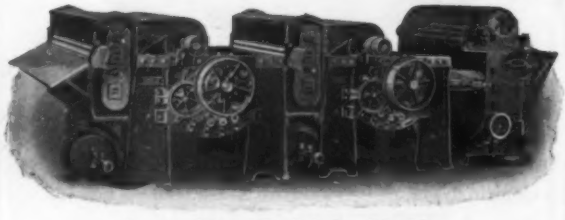
Write for free catalog today.

HILL-STANDARD CO.,
1918 Fun-Ful Avenue, Anderson, Ind.

Edward Ferger,
Southern Representative, 276 Lucille Ave., Atlanta, Ga.

THE FUN-FUL LINE
PLAYGROUND EQUIPMENT

SMITH & FURBUSH MACHINE CO.
PHILADELPHIA, PA.



Cotton Waste Reclaiming Machine.
(Shaughnessy Patent)

This machine does work never before accomplished and cannot be compared to any other.

It will remove dirt, shell, seeds, leaf or other foreign matter from motes, sweeps, fly, strips or damaged cotton.

Now in use by a number of the best mills throughout the country.

Send for Circular S-90

We also build a special Willowing outfit for cotton waste—Circular S-9

These Are the Tools Supplied With the
SIGNODE SYSTEM

Stretching Tool.

The Signode System consists of encircling bales in the press with Special Signode Strap, drawing the strap very tight and sealing by crimping the overlapping ends of the strap within a metal sleeve called a Signode. This System saves considerable time over any other method of applying strap to bales, and on account of the superior strength of Special Signode Strapping requires less weight of metal per bale than other types of strap. Some considerable saving in labor is also possible, making the capacity of a press greater per day in number of bales than by other methods.

One of the greatest advantages of the Signode System in connection with textile materials to be exported is the possibility, by stretching up the straps tightly and sealing them, of eliminating any rebound in the bale. With cargo space valued at $2.50 to $4.00 per cubic foot it is possible to save $3.00 to $15.00 per bale by using the Signode System over the use of any method of strapping the bales (either with metal strap or rope) which will permit of this rebound. Write for full information.

Sealing Tool.

SIGNODE SYSTEM, Inc., 108 West Lake Street, CHICAGO.

143 Liberty St. NEW YORK — 49 Federal St. BOSTON — 10 Tift St. ATLANTA — 1001 Chestnut St. PHILADELPHIA

Bethlehem Shipbuilding Corporation, Ltd.
South Bethlehem, Pa. September 20, 1918
Federal Sign System,
Lake & Desplaines Sts.,
Chicago, Ill.
Gentlemen:
We are in receipt of your communication of the 19th instant calling attention to the Federal Sirens which you have supplied on our orders from time to time and beg to advise that after taking this question up with our Electrical Department, we learn that this apparatus is all working very satisfactorily and we have had no trouble with same. We believe we have had desired results and trust this information may be of some interest to you.
Very truly yours,
BETHLEHEM SHIPBUILDING CORPORATION, LTD.,
Asst. to Purchasing Agent.
HOC:HTD

Bethlehem Shipyard Commends Federal Electric Siren

EIGHTEEN Federal Sirens of several types and sizes are installed in various plants of the Bethlehem Steel Corporation. As with all other plant equipment in this institution of national importance, the most efficient signaling device was chosen—and the letter above tells of the satisfactory service Federal Sirens are giving.

That Weird Penetrating Screech

of the Federal Electric Siren is the most distinctive, commanding and far reaching signal ever devised.

Used the country over in mines and industrial plants. As a time signal, it wakens men for miles around—for fire and emergency it penetrates every nook and corner of the plant commanding immediate action.

Please send me full particulars concerning Federal Electric Siren, with penetration radius of _____

Name _____

Company _____

Address _____

Cotton.

Send Coupon for full particulars

Federal Sirens are made in several sizes, from the large double head type with penetration radius of 1½ miles, illustrated above, to the small tenth-horse power size for indoor use. Cost of current consumed by large Siren averages $2.00 per year. No further maintenance expense. Operates at the touch of a switch located wherever desired.

FEDERAL SIGN SYSTEM (ELECTRIC)

Lake and Desplaines Streets, Chicago

Branches in all large cities

Special Message to Southern Mills

Conserve your employees. Hasten your efficiency by giving First Aid on the spot. Substantial and complete equipment furnished by those who know how.

F. H. Thomas Company, 689-691 Boylston St., Boston, Mass.

A Mill's Efficiency is Limited by the Equipment Supplied the Workers

If the receptacles are not easily handled, if they do not stand up under the most severe service, if they become unsightly in use, thereby offering an incentive to slovenly work—the mill's ability to produce is limited.

Diamond-Fibre Barrels

(one of which is shown here), as well as all other Diamond Fibre Mill Receptacles, meet all the above requirements. They are smooth inside. The top edges are metal bound and perfectly smooth. The color is thoroughly incorporated in the fibre, thus the receptacle does not lose its color in use.

Diamond State Fibre Company

Bridgeport, Pa., (Near Philadelphia) **Offices in Principal Cities**

We can supply trucks, cans, barrels, baskets of all shapes and styles. Write for information, prices, samples of Diamond Fibre. Can make to your own specification.

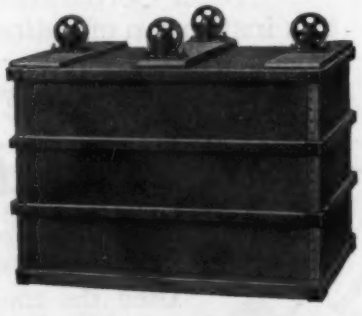
Diamond-F — A Mark of Quality — A Sign of Service

The Buyer Who Knows
Will Always Buy

Keystone Receptacles

Keystone Quality is the Standard
FOR ALL MILL BUYERS

Roving Cans — *Mill Boxes* — *Hard Fibre Trucks* — *Doffing Cars*



Warehouse Car Showing Bottom Construction.

Noted for their Construction, Quality and Durability.

The superiority of **KEYSTONE Products** is the result of our years of experience in the manufacture of fibre products.

Make no purchases of mill receptacles until you have informed yourself on the quality and prices of **KEYSTONE Products.**

Send your address on a postcard, *now*, and we will forward Catalogue "D."

KEYSTONE FIBRE COMPANY, Yorklyn, Del.

Southern Agents, Wilson Co., Greenville, S. C.

Laminar Roving Cans are built to perform a service as extended as that of the most powerful and costly machine in the mill. They are truly *permanent* mill equipment.

"Laminars" are made of ***VULCOT*** Fibre—one of the hardest and toughest of all manufactured materials. They are light, flexible and smooth. They will not dent, crack, splinter, or rust.

Hundreds of satisfied mill operators have abundant evidence on hand to prove that Laminars are both *good* and *unusual.*

Laminar Roving Cans are made in several popular types and four standard sizes, 9", 10", 12" and 14" diameter—height up to 42".

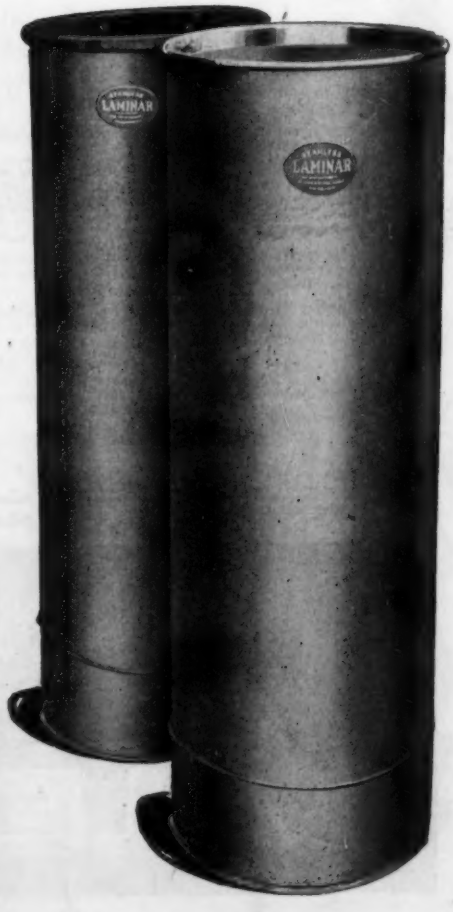
Full particulars, with sample of material, illustrations of our standard cans, etc., will be sent upon request. Write today.

American Vulcanized Fibre Company

Sole Proprietors and Manufacturers

New England Department - 12 Pearl St., Boston, Mass.
C. C. Bell, Vice President, Resident Manager.
580 Equitable Bldg.
Head Office and Factories, Wilmington, Delaware.

Once You Buy "Laminars" Your Mill is Equipped as to Roving Cans for Years to Come



Rapidity and Efficiency

are two features which you MUST have in a baling press.

The TORRANCE RAPID BALER has these features in abundance, and furthermore it is built to stand the use and abuse of long and severe service.

As to rapidity, the TORRANCE will bale 100 bales per 10 hour day.

As to efficiency, the TORRANCE makes a bale of density and tightness that satisfies the most exacting requirements.

The TORRANCE is built RIGHT—its strong construction assures its withstanding almost unlimited pressure, and the absence of chains, levers, long handles, etc., makes it last a lifetime without getting out of order.

All gears and shafting are located overhead out of the operator's way, so there's no chance for injuries or accidents.

Being gear and screw driven, it is always positive in action. It is particularly adapted to the baling of all textile mill products.

The price will appeal to you also, and this, together with its superior efficiency, makes it the baler you want. Ask today for prices and full information.

Immediate shipments.

Southern Agents Wanted.

Hercules Mfg. Co.
BENNINGTON, VERMONT.

TORRANCE
RAPID
BALER

Star Pail.

You Can Cut Equipment Expense by installing "Fibrotta" Ware

Take the "Fibrotta" Pail for general use, for example. It is very durable because it is made in one piece from a wood pulp base under tremendous hydraulic pressure, and has no hoops to fall off, no joints to open up and, the bottom cannot fall out. It has a hard glass-like mahogany surface, which can be cleaned easily and kept sanitary, and it does not swell, rust, leak, warp or dent out of shape.

"Fibrotta" Spittoons do away with ill-smelling nuisances, because their hard, glass-like mahogany surface can we washed easily with hot water. They are very durable and economical.

"Fibrotta" Fire Pails, Waste Baskets, Umbrella Jars, etc., will last longer than other ware, and save money for you. Write for "Fibrotta" Catalog.

CORDLEY & HAYES HEADQUARTERS
38 Leonard St., New York City

They're "Leatheroid"
Nothing Better Made

Mill Box. No. 3

Steel over wood top rim. New shoe corner irons.

Combination Doffing Car

Steel over wood top rim. Improved platform construction.

Steel clad boxes if desired.

Can be ordered from your mill supply house

Rogers Fibre Co.
(Leatheroid Sales Division)

1024 Filbert Street, PHILADELPHIA, PA.

FIG.20.

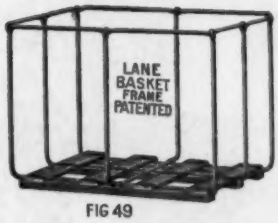


FIG 49

AT this season, especially, we like to think of Lane Canvas Basket users as our friends, to feel that in the broadest sense they are our partners---that our success is but the reflection of their success.

So, as we together face a new year, we feel not only deep gratitude for your past loyalty, but a desire for your unbounded future prosperity.

FIG.27

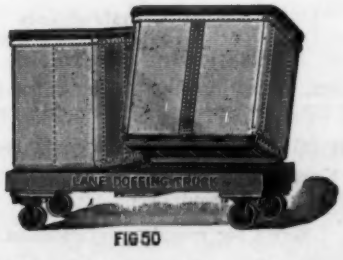


FIG 50

W. T. Lane & Brother **Poughkeepsie, N. Y.**

The Kron Lap Pan Scale
For Weighing Picker Laps

This picture shows one in use in a large Southern Cotton mill. This type of Kron is designed to be hung from an overhead trolley and pushed back and forth in front of the finishing pickers. Furnished in either 50 or 60 lb. capacity with one or two ounce graduation on a twenty inch dial. The lap pan can be made to fit individual mill requirements.

"Load and Look"

KronScales

AUTOMATIC (Made in U. S. A.) **SPRINGLESS**

All Metal Construction

perform automatically the whole weighing operation, weighing the material as fast as it can be handled. There's no chance for guessing—no false notions—no time wasted.

The Kron is made in Types and Capacities to meet every Textile mill requirement.

Write for complete information.

American Kron Scale Co.

422 East 53rd St., New York.

Branch Offices: Boston, Providence, Philadelphia, Pittsburgh, Baltimore, Chicago, Cleveland, Detroit, Minneapolis, San Francisco, Wilson, N. C.

Southern Office: 405 Urban Bldg., Louisville, Ky.

CANADIAN KRON SCALE CO., MONTREAL, CANADA.

HUNT

INDUSTRIAL
STORAGE BATTERY
TRUCKS

are the final solution of industrial hauling in, around and about the mill and warehouse. So perfect are they in construction and so well adapted to the work for which they are intended, it is no longer of **will**, but **when**, they are to become a part of your equipment.

To calculate the time, labor and money they will save to the cotton mills of the country, could best be arrived at by deducting, say fifty per cent of the present cost of transporting the various materials.

The Hunt Truck is simple in design, rigidly constructed, light weight, easy to operate, turns in very short radius and is always safely locked when not in motion.

Our service department will gladly cooperate with you in devising efficient haulage systems. Write for catalog W-16-1.

C. W. HUNT CO., Inc.

NEW YORK

Sales Office, 501 5th Ave., at 42nd St.
Works and Executive Office:
West New Brighton, N. Y.

Branch Sales Offices:
Chicago Washington Boston
Philadelphia

NO LOAD TOO HEAVY FOR A WOMAN WITH THE COWAN TRANSVEYOR

THE basis of the Cowan Trucking and Storage System is an all-metal elevating Transveyor and as many inexpensive wooden platforms as you need. These simple skids are built in your own mill as required. From raw materials to finished cloth, your product moves safely and quickly between operations on the platforms, without delay or extra handling.

Compact, convenient storage is a further advantage of this System; it saves about 50% floor space, keeps the cloth always dry, clean and away from the floor, and ready to move at a moment's notice.

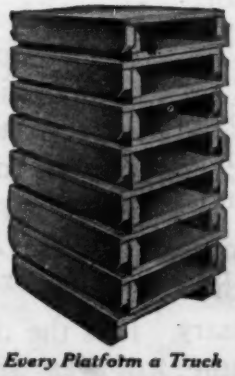
ONE WOMAN AND—

A Cowan Transveyor will equal two or three men in your mill. Here is a ready answer to the present labor shortage. In the saving of wages alone, the Cowan System pays for itself in a few months.

COWAN TRUCK CO.

801 WATER STREET

HOLYOKE, MASS.



Every Platform a Truck

[SIGN, CLIP & MAIL THIS COUPON]

COWAN TRUCK COMPANY,
801 Water St., Holyoke, Mass.

You may have your representative call on me to see how much the Cowan System could save us in labor and wages. This will not obligate us in any way.

Name ----------

Firm ----------

Address ----------

Keep The Truck Wheels Turning!

Pledged to Maintain Victory Transportation

MOTOR trucks are an indispensable factor in the war-making energy of the Nation. An armistice will not stop the countless thousands of them which are hauling war material from factory to camp and shipping wharf. War has multiplied highway transportation. Production must be maintained to meet the extraordinary demands of our Government and its Allies for food, clothing and munitions. These industries depend for their life upon uninterrupted, efficient, expanding, truck service.

Commercial needs have outgrown facilities. There are not enough trucks to go round. Truck makers are still engaged in war production. The White Company's entire output of trucks is required to supply the American and French armies.

Get the Most Out of Every Truck

Though hostilities cease, the truck shortage will remain. This winter it will be acute. It will be difficult if not impossible to get new trucks. Existing installations must be maintained and improved to handle the enormous volume of business.

Truck owners and truck drivers must learn how to get the most out of their equipment, how to avoid unnecessary wear, how to load and unload, route, lubricate and inspect and keep in order, under intensive operation. It is a prime essential to *"Keep the Truck Wheels Turning."*

Operating economy in dollars and cents, desirable as it is, is not the vital need. It is *Truck* economy, the fullest utilization of the transport facilities now available.

Our Transportation Experience Freely Offered

The White Company sees in this emergency an opportunity to be of service to the Nation and to individual truck users. While it has no trucks to offer at present, it has a motor transport experience as broad as American industry. It has not been devoting all these years to just making motor trucks. It has also been building *transportation*, in the sense of a right application of the truck to the haulage task, so that it will perform advantageously, operate continuously, use the least fuel and oil, conserve man power. The company's experience and organization which heretofore has been used to improve the transportation systems of White Truck owners, will now be placed at the disposal of all truck owners, large or small, whether operating White Trucks or equipment of other make.

It is the duty as well as the self interest of every truck user to make the most of

his equipment. The men and women of this country have been saving and giving and working and fighting, to win the war. They have a right to expect that every tool useful in keeping up our industrial efficiency shall be operated at its best. *Motor trucks are important tools.*

Our Pledge to Keep the Truck Wheels Turning

All the resources and the experience of all White Company men in every part of the country, not now engaged in war work, will be devoted to one purpose: to "*Keep the Truck Wheels Turning.*" Every representative is pledged to do all he can to help perpetuate *Victory Transportation.*

The company proposes to distribute in convenient form every helpful hint available for the most effective use of trucks. The first little book, entitled "A War Message to Truck Users," is ready for distribution. It deals with the subject of Supervision, Lubrication and Inspection of large fleets of trucks, by a fleet chief.

Believing that this is no time for a narrow commercialism, The White Company offers its transportation advice to every truck user, of whatever make of truck, free of charge.

Pledge to Maintain Victory Transportation

Every representative of The White Company is pledged to help maintain the transportation of the Nation's industries by offering truck users, of any make, every suggestion that will enable them to keep their trucks in continuous economical and efficient operation, thereby releasing man power, conserving material and fuel and generally helping industry to "carry on."

THE WHITE COMPANY
CLEVELAND, OHIO

A War Message to Truck Users

Ask your nearest White Representative for a copy of this booklet or write for it NOW. It may contain suggestions vital to keeping YOUR motor truck wheels turning and perpetuating VICTORY TRANSPORTATION.

THE WHITE COMPANY

CLEVELAND, OHIO, U. S. A.

Branches

NEW YORK	Park Avenue and 57th Street	BALTIMORE	Mt. Royal and Guilford Avenues
CHICAGO	2638-2640 Michigan Avenue	ST. LOUIS	3422 Lindell Boulevard
BOSTON	930 Commonwealth Avenue	SEATTLE	Eleventh and Pine Streets
SAN FRANCISCO	Market Street at Van Ness Avenue	PORTLAND	33-35 North Park Street
PHILADELPHIA	216-220 North Broad Street	MEMPHIS	Monroe Avenue and Pauline Street
PITTSBURGH	Craig Street and Baum Boulevard	NEW ORLEANS	923 Lafayette Street
ATLANTA	63-65 Ivy Street	KANSAS CITY	1619 McGee Street
		DALLAS	2000 South Ervay Street

Foreign Department

Park Avenue and 57th Street . . . . NEW YORK

Dominion Representatives

THE WHITE COMPANY, LIMITED, TORONTO, ONTARIO
14 Alexander Street

THE WHITE COMPANY, LIMITED, WINNIPEG, MANITOBA
666 Portage Avenue

THE WHITE COMPANY, LIMITED, MONTREAL, QUEBEC
3 Park Avenue

"*The* ROAD *to* BERLIN *Begins in* AMERICA"

2300 Looms—all Driven by Link-Belt Silent Chain Drives

WHEN the Lanett Cotton Mills, of West Point, Ga., erected their new weave shed and equipped it with 2,300 looms and 83,000 spindles, naturally the question of power transmission was of vital importance.

It was realized that the power requirements of these three acres of looms would be more or less intermittent. If driven by belts, it meant frequent belt slippage, loss of power, reduced machine efficiency and reduction in output.

Consequently, Mr. J. E. Sirrene, one of the foremost cotton mill Engineers of the South, who was retained by the Lanett Company as Consulting Engineer, advised the use of Link-Belt Silent Chain Drives.

These drives operate line shafting under the weave room floor. They insure a uniform, constant line shaft speed throughout the entire room. There is no slippage in transmission as with leather belts. And yet, in spite of their positive action, Link-Belt Silent Chain Drives are elastic enough to cushion loads and protect the driving medium. They are "Positive as a Gear, Flexible as a Belt, more Efficient than Either". Actual tests have proven them 98.2% efficient.

Our Book No. 258 showing many textile mill installations and giving details will be gladly mailed on request.

LINK-BELT COMPANY

PHILADELPHIA	CHICAGO	INDIANAPOLIS
New York - - - 299 Broadway	Kansas City, Mo. - - 306 Elmhurst Bldg.	
Boston - - - - 49 Federal St.	Seattle - - - - - 576 First Avenue, S.	
Pittsburgh - - - - 1501 Park Bldg.	Portland, Ore. - - - - First and Stark Sts.	
St. Louis - - Cent'l Nat'l Bank Bldg.	San Francisco - - - - 582 Market St.	
Wilkes-Barre - - 2d Nat'l Bank Bldg.	Los Angeles, - - - 163 N. Los Angeles St.	
Cleveland - - - 429 Rockefeller Bldg.	Toronto, Can. - Canadian Link-Belt Co., Ltd.	
Detroit - - 732 Dime Bank Bldg.	Denver Lindrooth, Shubart & Co., Boston Bldg.	
Minneapolis - - - 418 S. Third St.	New Orleans, C. O. Hinz, Hibernia Bank Bldg.	
Charlotte, N. C. -	J. S. Cothran, Com'l Bank Bldg.	

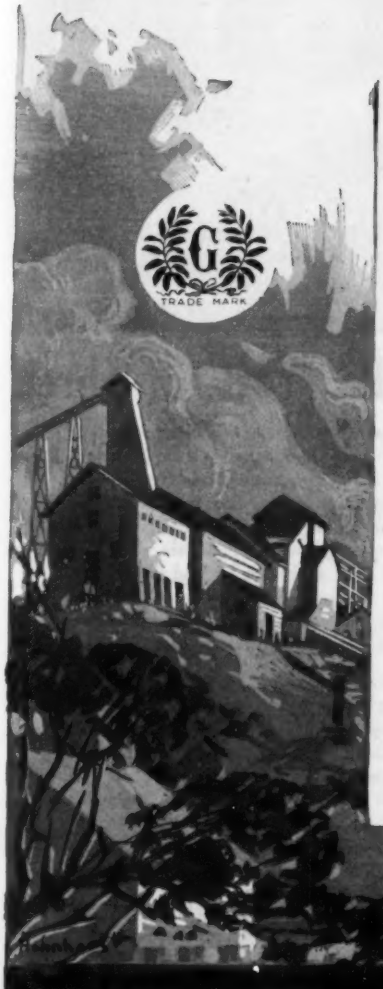
165

LINK-BELT SILENT CHAIN DRIVES

FORMER RECORD 8 Months

COMMANDER RECORD 18 Months

and still going strong



A WESTERN plant early in 1917 installed 85 feet of 20-inch, 10-ply Goodrich "COMMANDER" Transmission Belt as the main drive on the 250 H. P. motor to the line shaft driving to secondary crushers. It runs from a motor pulley, 41 inches in diameter with the *tight side on top*, to a 120-inch pulley on the line shaft, and the drive inclines upward about 20 degrees. It has been frequently called upon to handle a heavy over-load up to 350 H. P.

Here is a tough condition to say the least. In fact, some belt salesmen shy at bidding on a drive like this.

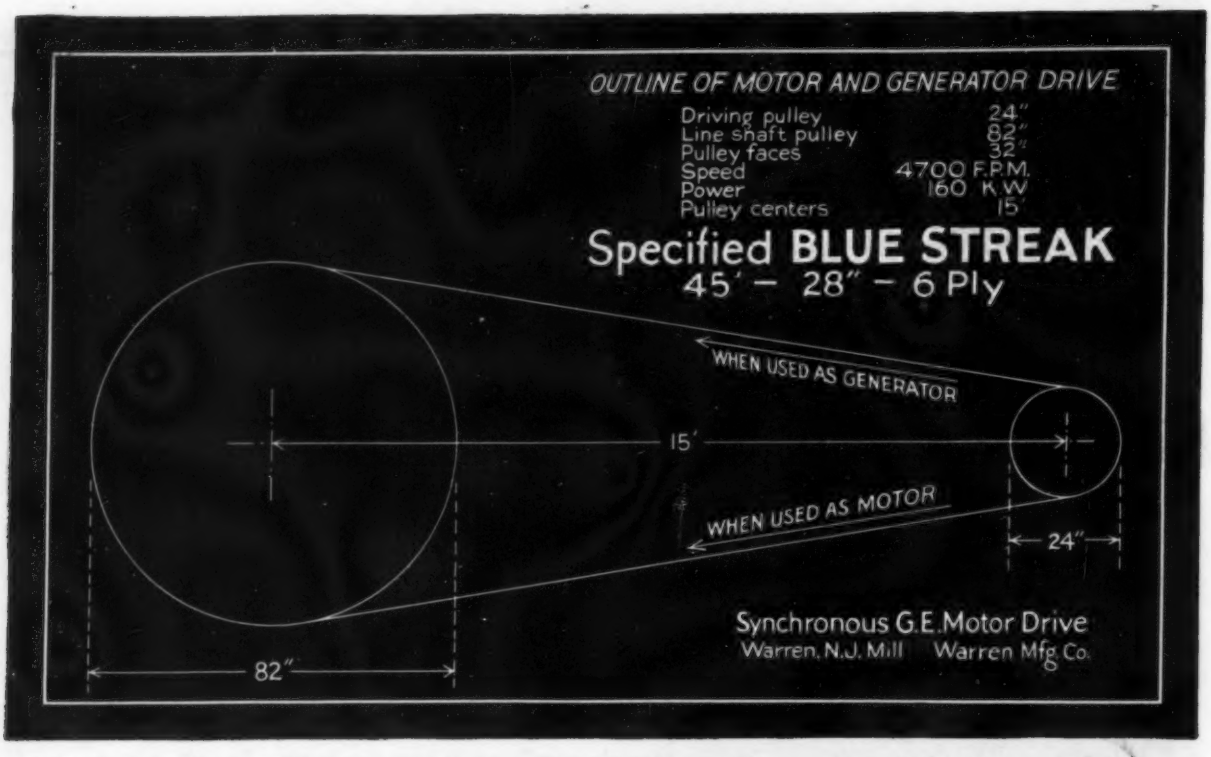
The best record of any other belt previously used on this drive was 8 months. "COMMANDER" has been in use *over 18 months* and is still running in perfect condition as this record is being written!

Many plants have some tough drive where only a "COMMANDER" will do. Have you such a drive? If you will write us fully describing your toughest drive we will ask one of our belt experts to call and prove to you how you can cut overhead with a "COMMANDER".

THE B.F.GOODRICH RUBBER COMPANY

The City of Goodrich—AKRON, OHIO

GOODRICH
"COMMANDER"
TRANSMISSION BELTS



Making One Belt—and the G.T.M.—Do the Work of Three

Three belts had been devoured in twelve months by a certain motor drive in the Warren Manufacturing Company's Warren, N. J., plant. All were large belts. Some were expensive belts. Together the three loaded that drive with a pretty figure of operating costs. While the third belt was petering out, a G. T. M.—Goodyear Technical Man—called. It was our Mr. Ford.

They looked at his card, asked him in, listened a while, and asked the price of a belt for that motor drive. The G. T. M. didn't even take time to ask the width of the belt—he just said that he didn't know the price. Before they could ask him what kind of salesman he was, he told them about the Goodyear plan of selling belts—of thoroughly studying conditions and then prescribing the belt that would meet those conditions most efficiently and economically. They thought of three belts of the past twelve months and reasoned that they had nothing to lose by trying the plan.

He studied that drive. It was a hard one. The speed was close to a mile a minute—and when the motor was not used as an auxiliary for driving seven beaters, it was reversed and used as a generator. The centers were short. There were a number of other peculiar conditions—but after the G. T. M. got through studying them he knew just what to do—he had seen some drives very like it and had tried out his prescription.

After allowing for special circumstances he prescribed a belt of only six plies—although many a power engineer would have said that more were necessary. But he knew the proved strength of every Blue Streak ply—a brute strength as remarkable as its pulley hugging grip. So he prescribed a twenty-eight inch six-ply Blue Streak—made endless. Although he had had great success with special fasteners of various types to fit certain conditions, he knew that the best of fasteners were hopeless here—so it was a Blue Streak made endless.

That belt was applied in November, 1916. Its cost was less than that of one of the three belts that had been so disappointing, and yet that Blue Streak lasted longer than the three together. That synchronous drive doesn't pile up any more undue costs for the seven beaters it serves, doesn't cause interruptions nor lowered efficiency any more.

If you have a belt-devouring drive that is eating too many dollars, ask a G. T. M. to call. He'll do it without charge when he is in your vicinity. There are many of them—all trained in the Goodyear Technical School—all with experience in plants similar to yours—all selling belts to meet conditions and not as a hardware store sells nails. The G. T. M.'s services are free simply because the savings they effect for purchasers are so considerable that a gratifying volume of business from the plants served is certain to come to us within a few years.

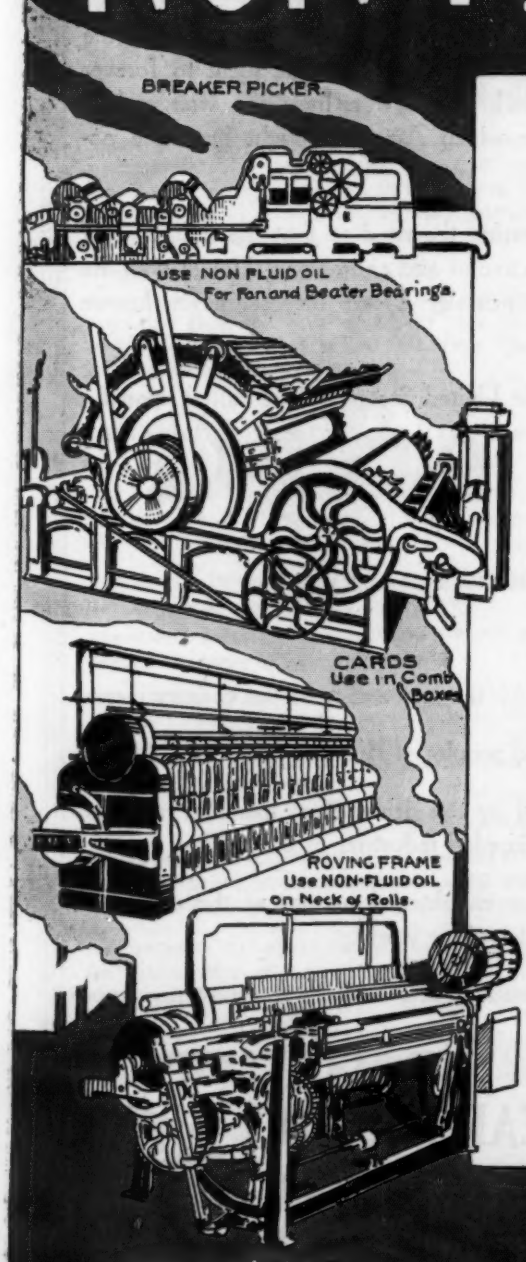
THE GOODYEAR TIRE & RUBBER COMPANY, AKRON, OHIO

BELTING · PACKING · HOSE · VALVES

GOODYEAR

AKRON

NON-FLUID OIL



This is No Time for Half Measures

no time for experimenting with substitutes. The country is demanding of every manufacturer the utmost production.

In your mill use the best lubricant obtainable—the lubricant that fully protects machinery from excess friction and reduces power consumption, but does not drip and spatter all over the goods being made. This means

TRADE MARK REGISTERED IN

NON-FLUID OIL

UNITED STATES PATENT OFFICE

Where to use NON-FLUID OIL

Breaker Pickers use NON-FLUID OIL for Fan and Beater Bearings.
Flat Cards use it in Comb Boxes and on Cylinders and Licker-in Bearings.
Sliver Lap Machines use NON-FLUID OIL for roll necks.
Ribbon Lap Machines use NON-FLUID OIL for roll necks.
Combers use NON-FLUID OIL for roll necks.
Drawing Frames use NON-FLUID Oil for roll necks.
Roving Frames use NON-FLUID OIL for roll necks and for Steps.
Intermediate and Fine Frames use NON-FLUID OIL for roll necks
Spoolers use NON-FLUID OIL for cylinder bearings.
For Twisters use NON-FLUID OIL for twister rings and necks of rolls.
Quillers use NON-FLUID OIL throughout.
Looms use NON-FLUID OIL for Cams and all bearings.

These are the main uses for NON-FLUID OIL, which is being employed successfully by more than seventy per cent of the largest textile mills in the country. Do not put off investigating NON-FLUID OIL. Send now for free testing samples and instructive literature.

New York & New Jersey Lubricant Co.
165 Broadway New York

Branches: Atlanta, Ga.; Charlotte, N. C. Lewis W. Thomasson, District Mgr., Charlotte, N. C.

Send in this Coupon for Testing Samples. They are free.

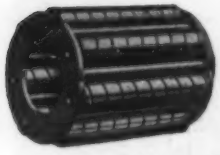
COUPON

We would like to try NON-FLUID OIL

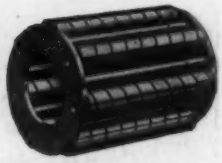
For_____

Firm_____

City_____



PEACE WILL MEAN CONTINUED PROSPERITY



The event for which American Industries have confidently, yet anxiously waited since the first drop of American blood was spilled and the first American dollar was spent to forever establish the freedom and peace of the world has arrived. The war has been won and as President Wilson told the Congress, "Everything for which America fought has been accomplished."

The War Industries Board is carefully but surely clearing the road so that the industries of our country can take up, unhampered, their pre-war activities and carry them through with the knowledge gained in war times to an economic, fundamentally sound success, never known before.

In the adequate reconstruction of a war-torn world the United States will be called upon for the production of peace materials as greatly and as steadily as it was for the production of war materials.

The United States must provide for years to come:

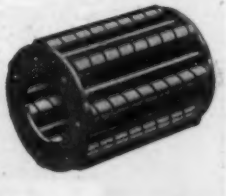
1. **Steel** and the other industrial metals for their thousand important uses.
2. **Coal** in greater amount than ever before.
3. **Ships** to hold for us the place in foreign trade which the importance of our country merits.
4. **Food** and clothing for the weakened, war-shocked peoples of Europe.
5. **American Machinery** to replace machinery ruined by the demands of munition manufacture. American Machinery to re-establish the crippled industries of our Allies.

The ideals established by the combined Victory of the enlightened nations of the earth will surely lead to Peace, Happiness and Prosperity for the whole world.

The Hyatt Roller Bearing Company feels that the ensuing years will be the most prosperous years in the history of the United States.

1905

HYATT ROLLER BEARING CO.
METROPOLITAN TOWER, NEW YORK



HYATT ROLLER BEARINGS

Are Your Bearings Protected?

When the tiny molecules of lubricating matter are squirted into the bearings on one of your machines, they are supposed to keep apart the metallic surfaces of the ball and roller bearings. This prevents friction and insures the long life of bearings.

But suppose the lubricant does not lubricate properly; then the balls or rollers lose their shape; or they become pitted and worn, from rubbing surface against surface.

SLO-FLO No. 30

Is a special lubricant developed to protect textile machinery and increase its efficiency.

The recommendations listed below are the result of hundreds of practical tests.

Small high speed ball bearings.....27
Large slower speed ball bearings..28 or 29
Small high speed roller bearings.....27
Large slower speed roller earings, 28 or 29

Let us send you the Slo-Flo data book,—"Some Facts and Figures on Textile Mill Operation."

Let us send you one barrel of Slo-Flo No. 27—to try out in the lubrication of your small high speed ball bearings.

We can make immediate delivery on a "guarantee" basis. May we?

SWAN AND FINCH COMPANY
NEW YORK

Quality Oil and Grease Products Since 1853

Main Office
165 Broadway, New York

Branches
Providence, 306 S. Water St.
Hartford, Aetna Bank Bldg.
Philadelphia, Otis Bldg.
Chicago, 20 W. Jackson Blvd.

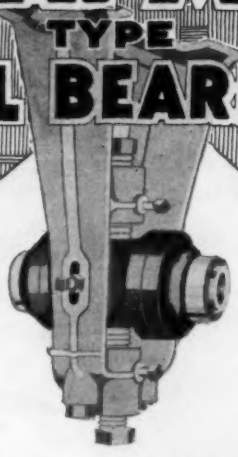
Pacific Coast Representative
Norman Cowan Co.,
433 Rialto Bldg.,
San Francisco, Cal.

Distributors
Fred Smith, Mail Bldg., Toronto, Can. (For Quebec and Ontario.)
Fulton Supply Co., Atlanta, Ga.
Carolina Supply Co., Greenville, S. C.
Textile Mill & Supply Co., Charlotte, N. C.

Works
Bayway, N. J.
Syracuse, N. Y.

SCIENTIFIC LUBRICANTS for SCIENTIFIC LUBRICATION

CHAPMAN TYPE BALL BEARINGS



CHAPMAN Type Ball Bearings are primarily designed for power transmission purposes; they have been constructed to be fitted into any of the standard hanger frames in the market without tearing down the hanger, interchanging with self-oiling boxes of the same shaft sizes.

Chapman Type Ball Bearings will save 15% to 40% of your total power consumption, lower lubrication costs 95%, and are entirely dust and drip proof.

They are very substantial in construction and are designed with an ample factor of safety, insuring long life under conditions met in power transmission.

A fund of data has been compiled which we will be glad to place at the disposal of manufacturers, without charge, also our engineering services are at your disposal in either designing new transmission equipment, or the installation of ball bearings in existing plants.

The Complete Facts on These Economy Bearings Are in Catalog No. 3 M. Send for it.

TRANSMISSION BALL BEARING CO., Inc.
1050 Military Road,
Buffalo, N. Y.

New York, Philadelphia, Cleveland, Chicago, Cambridge, Mass.
The Chapman Double Ball Bearing Co., 339-351 Sorauren Ave., Toronto, Ont.

AMERICAN STEEL SPLIT PULLEYS

Correctly designed for maximum strength with light weight. Guaranteed for minimum belt slip, minimum air resistance, double belt service, rim speeds up to 6000 feet per minute.

The American Pulley Company

Philadelphia, Pa.

Valuable book "Getting Maximum Pulley Efficiency" sent free on request.

Long Life Bushings in Spite of Neglect.

For Efficiency and Economy

Oil-less

"NIGRUM" "BOUND BROOK"

(Impregnated Wood) (Graphite-and-Bronze)

Bearings

Trade Mark Reg U. S. Pat. Off.

You'll never have to stop your machine, due to the neglect of someone to properly oil it, providing you use NIGRUM or BOUND BROOK Oilless Bearings.

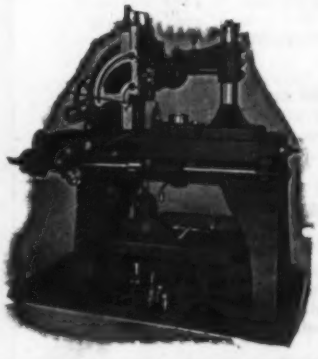
They run smoothly and evenly without oil, grease or attention. They will save you money by saving you oil and eliminate much of the wear and tear upon the working parts of the machine.

Write for Interesting Booklet, "Oil-less Bearings."

BOUND BROOK OIL-LESS BEARING CO.

10 Church St., BOUND BROOK, N. J.

All Genuine Graphited "Oil-less Bearings" have always been made at Bound Brook, N. J., in the United States of America



Full Automatic, Semi-Automatic and Hand Operated

Gear Cutting Machines

Especially adapted for use in Cotton Mills Hundreds now in use. Send for Special Circulars.

The D. E. Whiton Machine Co.,

NEW LONDON, CONN.

Don't Spend Good Money for New Parts.

Renew Your Broken Ones.

What's the use of spending your good money for new machines and machine parts, when those broken parts can be made as good as new by welding? It will pay you in more than one way to install a

B-W Welding and Cutting Machine

and have it always ready to instantly repair any machine that breaks.

We not only supply the machine, oxygen and supplies, but we send experts to your plant to teach your mechanic how to use it.

B. W. SERVICE means that if you have a breakdown too large for your own mechanic, our experts are always ready to come to you.

Write today for catalog and price list.

BIRD-WILCOX COMPANY, Inc.

Atlanta, Ga. Savannah, Ga. Chattanooga, Tenn.

Charlotte, N. C. Gretna, La.

Tycos Catalogs
should be on the desk of every individual interested in the Indicating, Recording and Controlling of HEAT
Write for them specifying the type of Instrument you are interested in
Tycos Thermometers
Taylor Instrument Companies
ROCHESTER N.Y.

The Completed Cylinder

When the cylinder is removed from the ovens a hole is drilled in the mass and this cavity filled with pure long fibre asbestos, permitting an even distribution of the gas to the porous mass. The cylinder is then charged with Pure Acetone (the correct solvent for acetylene) the amount not exceeding 40 per cent of the total volume of the cylinder. The Fuse Plug, Valve and Name Plate then applied and cylinder is ready to be charged with gas.

Commercial Acetylene Supply Company

MAIN OFFICE: 80 BROADWAY, NEW YORK CITY
Trust Co. of Georgia Bldg., Atlanta, Ga.
Aurora, Ill. Boston, Mass. Bound Brook, N. J. Chicago, Ill.
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Machine Tools—Mill Supplies—Foundry Equipment
36-38 WEST ALABAMA STREET, ATLANTA, GEORGIA

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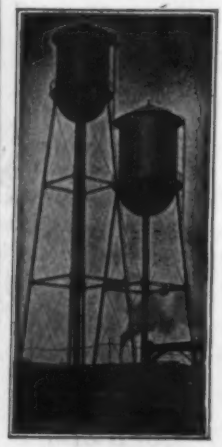
That are Built Right



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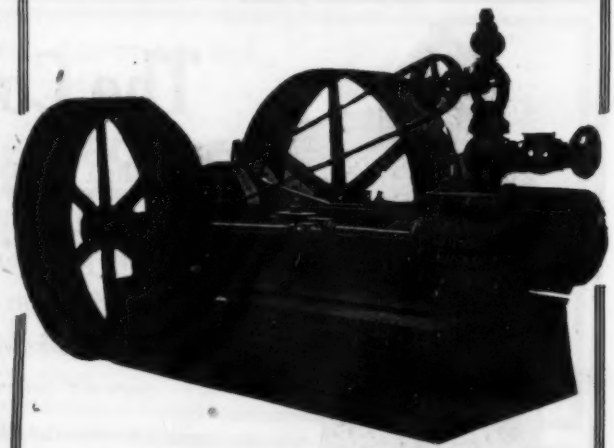
Tell us what you want and let us quote prices.

The Walsh & Weidner Boiler Co.
Chattanooga, Tenn.



J. S. SCHOFIELD'S SONS CO.,
Macon, Georgia

MANUFACTURERS OF

High Pressure Return Tubular Boilers, High Grade Stationary Steam Engines, Tanks, Stacks, Stand Pipes.

Heavy Castings and Wrought Iron Works.

Economies of Pure Water for Textile Mills

BY JOHN J. FELSECKER,
Manager Water Softener Department Wm. Graver Tank Works

The subject of water purification is of such vital importance that it warrants the consideration of the highest managing and financial heads of all textile mills.

Hundreds of mills are already using Softened water—thousands more would if they realized the economies and the improvement in their product which would surely result.

But when Water Softening is talked of among textile men they generally think of one thing only—the use of pure water for washing, rinsing and other processes where water comes in direct contact with their product. How many realize that to use the same soft water in their boilers would effect as great, or in many cases far greater economies than in the mill.

If the water needs of the entire institution were considered as a whole, and the various methods of water treatment carefully investigated, it would be plain that the use of a lime and soda ash treating plant would provide soft pure water in sufficient quantities for manufacturing use and for boiler feed as well, and would cost to operate little if any more than the plant of small capacity, which many mills utilize for their manufacturing processes only.

Leaving the latter use for separate consideration, it is a fact that well informed power plant superintendents generally realize the need of pure water for their department, but frequently are compelled to content themselves with half-way means of alleviating hard water troubles, by the apathy of their superiors toward the subject—a state of mind that can only arise from lack of appreciation of the economies which would surely follow the installation of an efficient Water Softening and Filtration Plant, designed and operated to meet the peculiar conditions of each individual water supply.

Every progressive engineer would be delighted to have his superiors take the initiative in adopting a policy which he has long advocated. It would lighten his tasks—vastly increase the efficiency of his department and therefore the estimation in which he would be held because of his ability to effect reductions in power costs, hitherto impossible.

Many mills use soft water in the mill and overlook entirely the savings possible in the boiler room.

The fact that railroads have adopted Water Softening Processes much more generally than Stationary Power Plants, may be accounted for by the fact that Water Softening was forced upon them by imperative War need for a greater increase in motive power than could possibly be filled through the manufacture of new locomotives. The proper treatment of boiler feed water was the only common sense means of increasing the efficiency of existing locomotives to meet traffic demands.

Maximum efficiency of Stationary Power Plants is just as vital in the industrial scheme as that of railroads, but there is one factor that makes the need of pure boiler water less obvious in power plant operation than with railroads. That is the fact that tying up a locomotive boiler for repairs necessarily ties up the entire locomotive, while in the Stationary Power Plant it is possible, and in fact general practice, to provide sufficient excess boiler capacity so that one or more of the boilers may be constantly out of service for cleaning and repairs without seriously effecting the operation of the power plant.

Operating under these conditions the effects of bad water **do not become apparent in the plant output** and are therefore not brought forcibly to the attention of the managing officials. Nevertheless, an analysis of the expense occasioned by admitting impure water to the boilers would show a waste that would never be tolerated in any other department of an efficient industrial plant.

The general heads under which such unnecessary expense would show are:—

1. Interest on an investment in 10 to 15 per cent excess boiler capacity.
2. Cost of frequent removal of scale from boilers.
3. Cost of cleaning mud and soft scale from heaters, pumps and pipe lines.
4. Progressive fuel losses between cleaning periods resulting from a continual average scale deposit of 50 per cent of that found at cleaning.
5. Occasionally complete shut-downs caused by clogging of pipe lines and interfering with the supply of water to the boilers.

The survey of the water problem of a 4800 horsepower plant generating current for a Southern Ohio Traction line shows the following situation:—

The water used was both hard and muddy. Two heaters were provided, one of which had to be closed down each week to remove the heavy deposit of soft muddy scale which accumulated during a week's use in the heater, pipe lines and boiler feed pumps, requiring an entire day of two men's time.

The boiler equipment consisted of twelve 400 horsepower boilers, one of which had to be kept out of service each day for removing the scale accumulated during eleven days of operation and which required constant time and three men at a wage of 45 cents per hour.

This deposit averaged 1-16 to 1-8 inch thick, so that all boilers were constantly operating under a handicap amounting to an average of one-half this amount, or let us say 3-64 of an inch of hard scale, which, according to the tests of the American Society of Mechanical Engineers, results in the use of 10¼ per cent more fuel than would be required with clean boilers.

This plant consumed, approximately, 120 tons of coal per day, which at a cost of $4.00 per ton at the stokers meant a waste of fuel amounting to $17,520 per year. Add to this, the interest on an investment on excess boiler and heater equipment—the yearly wages of men required for cleaning—the depreciation of boilers through operating under adverse conditions, and you have an annual expense far in excess of the total cost for installing and operating an efficient Water Treating Plant, which would practically eliminate these expense items.

20,000 gal. per hour Bartlett-Graver Water Softener in use by the Paramount Knitting Co. at Kankakee, Ill.

In other words, a Water Softening and Filtration Plant would have more than paid for itself in one year, an investment that could not be duplicated in any other department, by a large margin.

Although this example quotes figures from a larger plant than would be required by a textile mill, the economies effected in smaller plants under similar conditions would be proportionate. Moreover the necessity for eliminating possible shut-downs would be correspondingly greater in cases were an adequate excess heater and boiler capacity was not provided.

Wm. Graver Tank Works

Steel Tanks and All Steel Plate Products

4812 Todd Ave.,

East Chicago, Indiana

Bartlett-Graver Water Softeners

Expert Engineering council in connection with the water purification problems of the Textile Mill.

SEND THIS COUPON

We are interested in water treatment. Please send information blank for data for a FREE survey of our water supply.

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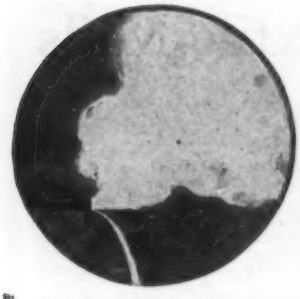
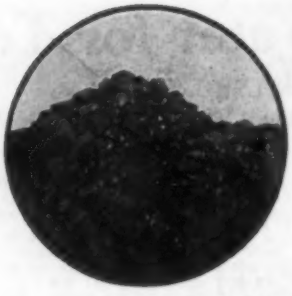


"White Coal"



"Black Coal"

Help Your Plant Save—
The "White Coal of Industry"

The boiling hot water resulting from condensation in your steam lines is worth money. You have paid for it in terms of coal. It contains valuable heat units. It is the "White Coal of Industry" —it should not be wasted.

And it need not be wasted. The Morehead Back-to-Boiler System will save it for you by returning it to the boiler at temperatures as high as 400 degrees Fahrenheit. It reduces coal consumption an average of 20%. At the same time your steam will be "dryer" and more efficient; your production speeded up and profits increased.

Write today for facts and figures on what the Morehead System will do in your plant.

Morehead Manufacturing Co.
Cotton Mill Dept.
Detroit, Michigan, U. S. A.

GREETINGS

Coal Thefts Stopped

Dollars Saved

Cyclone Property Protection Fence

Stops the coal thief at your property line.
Saves the expense and difficulty of replacing stolen coal.
Protects against heatless days—insures steady production.
Renders day and night protection for all property enclosed.
Soon pays for itself in Losses Stopped—Cash Saved.

Guards Your Coal Pile—Ready for Use When Needed

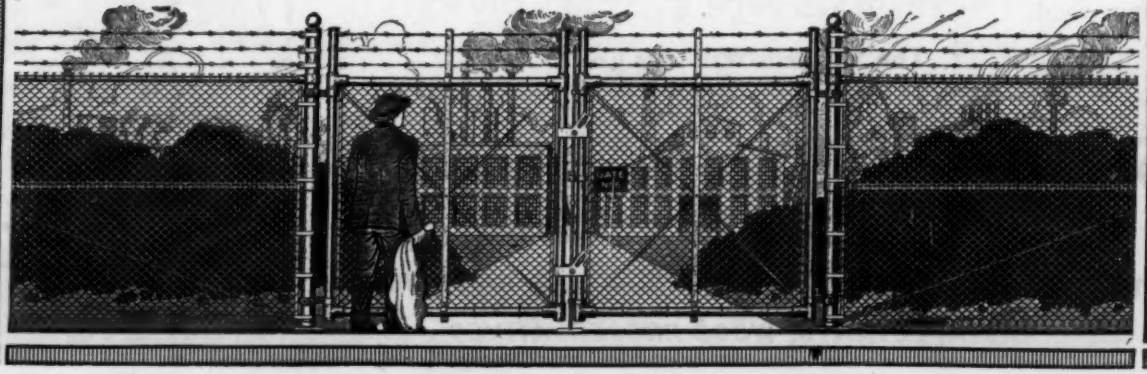
Coal and car shortage make coal protection a necessity. Install Cyclone Property Protection Fence Now—avoid coal losses later.
Fabric: Chain Link, heavily galvanized steel wire.
Posts: Tubular steel set in concrete.
Post Tops: Pressed Steel carrying three or five barb wires.
A Cyclone engineer will call and suggest a system of property protection that will meet your requirements.

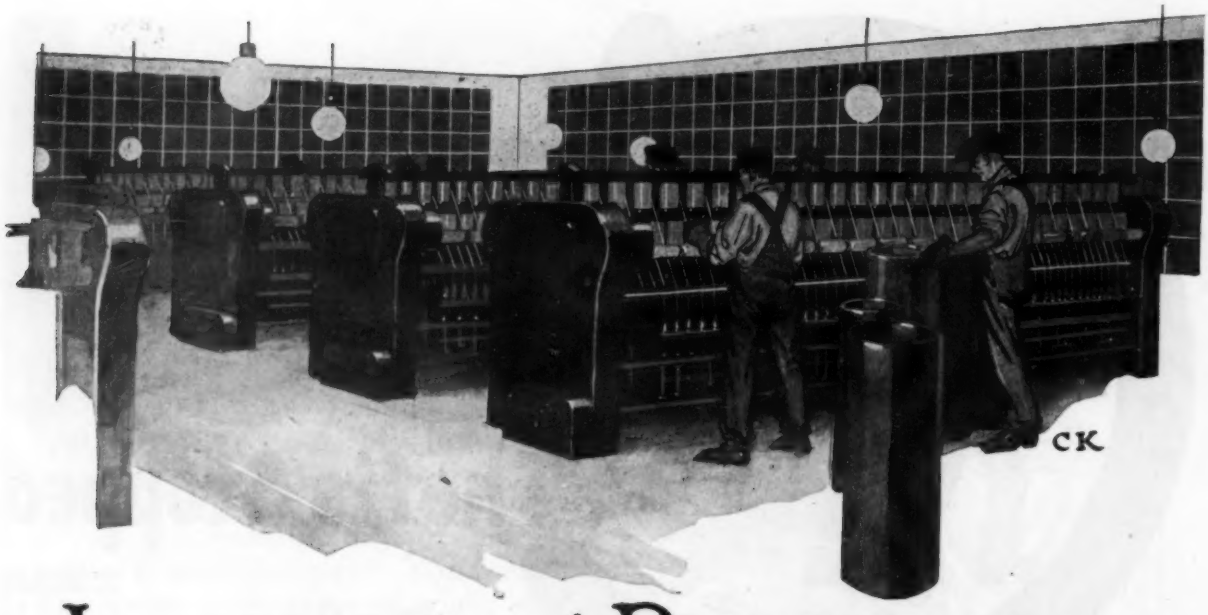
Phone, Wire or Write Main Offices, Waukegan, Ill. or Offices Nearest You.

CYCLONE FENCE COMPANY

Factories: Waukegan, Illinois. **Cleveland, Ohio.**

Branches—Chicago Philadelphia New York Washington Oakland, Cal. Portland, Ore. San Francisco





Increasing Production by Standardizing Upkeep

War is now the national industry.

Costs must be kept down, overhead reduced, accidents avoided, working conditions improved, output increased.

Production has become a matter of men. The workers' efficiency is inseparable from factory upkeep. Workers work best in factories that are kept best. Factories using Sherwin-Williams Standardized Industrial Up-keep prove this.

In the column to the right are listed the 20 Sherwin-Williams Products. The benefits are not in the products alone but in the method of using them.

The overhead savings from this system are in purchasing, warehousing and shipping. The factory savings are in labor and in materials. The benefits to the workers come in better health, better sight, greater concentration, more loyalty. Your profits come in increased production at lower cost.

Write today for new book entitled "Sherwin-Williams Industrial Upkeep Products". It is a profit story that you have never read.

The Sherwin-Williams Co.,
806 Canal Road, Cleveland, O.
Branch Offices and Warehouses in All Important Cities.

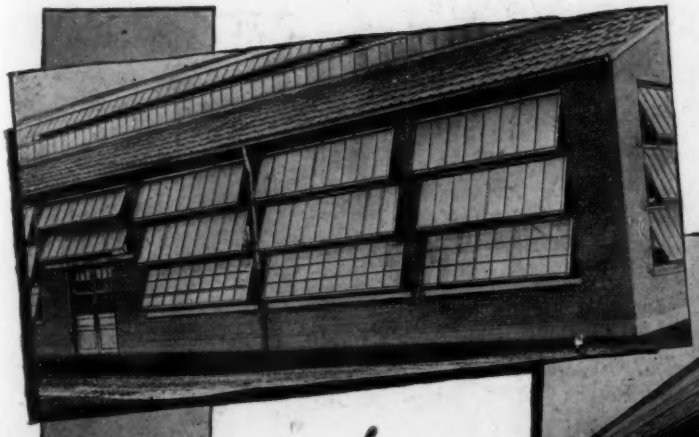
SHERWIN-WILLIAMS PRODUCTS
PAINTS AND VARNISHES

DYESTUFFS, COLORS, PIGMENTS, CHEMICALS, INSECTICIDES, DISINFECTANTS, WOOD PRESERVATIVES

SHERWIN-WILLIAMS INDUSTRIAL UPKEEP PRODUCTS

1. S-W Mill Whites.
2. S-W Standard Cottage Paints.
3. Dado Enamels.
4. Machinery Enamels.
5. Aluminum Paint.
6. Sprinkler Enamel.
7. Conduit Paint.
8. Salamander Smokestack Paint.
9. Factory Coating.
10. Pipe Enamels.
11. Metal Protective Paints.
    A. Metalastic
    B. Galvanized Iron Primer
    C. Reinforced Red Lead
12. Fence and Rough Building Paints.
13. Concrete and Cement Paint.
14. Concrete Floor Paint.
15. Sash and Door Paint.
16. Old Dutch Process White Lead in Oil.
17. S-W Linseed Oil.
18. Utility Varnishes.
    Bexpar all around spar varnish for exterior use.
    Scarnot water proof interior varnish.
    Marnot water proof floor varnish.
    Marvelac, quick drying shellac substitutes.
19. Wood Preservatives
    Carbolic-oil—for Wood Preservative purposes.
    Chlorocene—a wood preservative, Disinfectant and Vermicide
20. Composition Roof and Metal Paint.
    S. W. Ebonal.

Each for its purpose is best.



Pond Continuous Sash in short lenghths between pilasters. Controlled in lines or groups by Pond Operating Device.

Pond Continuous Sash in foundry monitor. Underlapping storm panels exclude rain at ends of lines. Electric motors may be used to operate very long lines.

Pond Continuous Sash in sawtooth roof. For maximum ventilation the sawtooth sash lines may be operated in groups by electric motors. This construction, on the top floor of a multi-story factory, enables all the most exacting work to be done under ideal conditions. A building so designed may be made wider or higher than would otherwise be practicable.

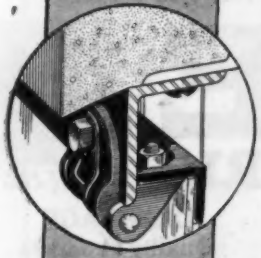
Use It Where You Will

Whether in side walls, monitors or roofs, Pond Continuous Sash overcomes the limitations of old-time windows. Operated in long lines or groups by the Pond Operating Device, it affords *mass* ventilation with *mass* control, and weather protection open or shut.

By ensuring an abundant fresh air supply under all conditions, Pond Continuous Sash is working a transformation in efficiency. The best results follow where the building is designed to take full advantage of the ventilating possibilities afforded by the sash.

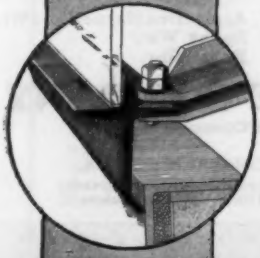
We gladly place the results of our wide experience in design at the service of our customers and their architects or engineers.

Booklet, "Air, Light and Efficiency," tells more about Pond Continuous Sash and how it may be used.



Malleable iron hinges are used, spaced four feet on centers, with bronze pins

Pond
CONTINUOUS SASH
PATENTED
WEATHER-PROOF WHEN OPEN



Patented sill member. Drip holes prevent packing water when sash is open. Opposite flanges take thrust of operator without strain on glass

DAVID LUPTON'S SONS COMPANY

Amber Street and Allegheny Avenue Philadelphia, Pa.

Makers of modern equipment for daylighting and natural ventilation

Pond Continuous Sash is top-hung under an overhanging angle, and overlaps storm panels 2 feet wide at the ends. Its 20-foot units are connected by weather proof expansion caps giving needed flexibility for alignment with steel work.

Its members are extra heavy and rigid; all joints are oxy-acetylene welded. Control in long lines is made easy by the patented Pond Operating Device, hand or motor driven.

Immediate deliveries from stock.

Lupton
INVESTMENT VALUE

For a Score of Uses in Your Plant

YOU will be interested in knowing how Page Wire-Link fabric will serve your needs better than any other material for many purposes around your plant.

Page Wire-Link fabric is the result of 35 years of Page dominance in the wire-fabric field. Already hundreds of the leading industrial concerns have adopted it for exterior protective fencing. It makes thoroughly effective, easily adjustable window or machinery guards. It furnishes vermin-proof and intrusion-proof interior partitions. And it is rapidly supplanting other forms of conveyor-belting.

PAGE
WIRE-LINK FABRIC

Our Engineering Department at Adrian will be glad to go into detail with you regarding the suitability of Page Wire-Link fabric, or any other Page product, for your particular needs. There is no obligation involved—we will merely suggest possible ways in which you can gain in efficiency or save in expense.

We can, if desired, supply any Page product in wire rolled in our own mills from billets of ARMCO (American Ingot) iron, made for our use by the American Rolling Mill Company of Middletown, Ohio. We possess the sole right to the use of this wonderful rust-resisting iron in wire and wire products.

Write us today.

Other PAGE Quality Products

Special Analysis Wire
Armco Iron Welding Wire
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Woven Wire Farm Fence
Wire Lawn Fence
Ornamental Iron Fence
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"Copperweld"—Copper Clad Steel—Wire
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PAGE STEEL & WIRE COMPANY

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Established 1883

ADRIAN, MICHIGAN *Factories* MONESSEN, PENNA.

Branches: New York, 30 Church Street; Pittsburgh, 644 Union Arcade; Detroit, 660 W. Fort St.; Chicago, 175 W. Jackson Boulevard.

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Power Plants

Steam Electric Hydraulic

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Plans and Specifications
Supervision of Construction
Reports Tests

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J. E. Sirrine Engineer
Greenville South Carolina

The New Dye House of the Holeproof Hosiery Company, Milwaukee, Wis.

They wanted to build a modern dye house

—one in which the most up-to-date methods and equipment would be applied to their own particular requirements. So the Holeproof Hosiery Co. engaged Lockwood, Greene & Co., Engineers.

The result, as shown above, is a modern dye house of reinforced concrete, in which daylight, drainage, ventilation and permanence of construction are provided for in the best manner. The layout includes a drug room and laboratory and is arranged throughout for maximum convenience and economy in the handling of work.

What is the nature of your problem? We can help you no matter what it is, for our engineering service includes special studies of local conditions, making plans and specifications, overseeing construction and preparing lay- it of machinery and all mechanical equipment.

The book, "Building With Foresight," explains and illustrates our service more fully. It will be sent upon request on your business letterhead, mailed to our nearest office.

LOCKWOOD, GREENE & CO.
ENGINEERS

BOSTON, 60 FEDERAL STREET - CHICAGO, 30 S. DEARBORN STREET
ATLANTA, HEALEY BUILDING - - NEW YORK, 101 PARK AVENUE
LOCKWOOD, GREENE & CO. OF CANADA, LTD., MONTREAL, P. Q.

$184,998.82 saved for U.S.

This Shipment of ECONOMY renewable FUSES and "Drop Out" Renewal Links

is starting on its way to four U. S. Navy Yards. As compared with the number of "One-Time" Fuses necessary to provide the same electrical protection, the 906,510 "Drop-Out" Renewal Links on these trucks alone save the Government $184,998.92.

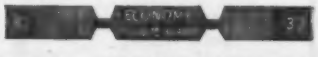
The contract from the Navy Department for ECONOMY renewable FUSES and "Drop Out" Renewal Links was issued June 22nd, 1918. The award covered urgent delivery of hundreds of thousands of fuses and nearly a million Renewal Links to eight U. S. Navy Yards. In thirteen working days, less than one half the time specified for completing delivery, this Government order came through production, and, after passing inspection, was ready for the carrier.

The material on the trucks, representing final delivery to four of the eight Navy Yards, required 159 cases, which weighed 37,731 lbs., and which was invoiced to the Government at $80,340.48.

The U. S. Government is one of the largest buyers of ECONOMY renewable FUSES. Vital electrical circuits are protected with ECONOMY Fuses, because of their safety and efficiency—the saving of 80% of the year's fuse maintenance expense is of minor importance, even though large sums of money are involved. It is worth your while to see that all the electrical circuits in your plant are guarded by ECONOMY renewable FUSES.

ECONOMY renewable FUSES are sold by leading electrical jobbers and dealers who will gladly show you the complete line and quote prices.

Write for Catalog 12.



ECONOMY FUSE & MFG. CO.

Kinzie & Orleans Sts., CHICAGO, U. S. A.

Sole Manufacturers of "ARKLESS"—the non-renewable Fuse with the 100 per cent Guaranteed Indicator.

ECONOMY "DROP OUT" RENEWAL LINKS

instantly restore to their original efficiency Economy Fuses which have operated. A stock of inexpensive "Drop-Out" Renewal Links always on hand represents but a small investment.

ECONOMY FUSES ARE ALSO MADE IN CANADA AT MONTREAL

ECONOMY renewable FUSES

"Fusing Your Circuits the UNION Way"

means scientific knowledge applied practically for the sake of Efficiency, Longevity and Minimum Cost.

THIS scientific knowledge is the result of 30 years of study. The practical application is the result of 30 years of experience. No one type of fuse in the world will properly fuse *all* circuits. That's scientific truth.

A renewable fuse will properly fuse one circuit where a non-renewable fuse would be out of place and vice versa. That's practical experience gathered from the whole electrical world.

Fusing your circuits the Union Way means making the best use of each type of fuse according to the requirements of each electrical circuit. It is a great, big subject.

Now then, two heads are better than one, Let's get *your* Engineer and our Fuse Engineer together. Let them go over your circuits, and ascertain their individual requirements. Let them "swap" experiences. After that it is all an open book. Our Fuse Engineer will bring without cost or obligation to you, 30 years of practical knowledge and experience. Your engineer, if a competent man, will be more than eager to listen and learn.

Write or wire today for our Fuse Engineer. He is somewhere near you no matter where you are.

"Union" Fuses, both renewable and non-renewable are sold by dealers in electrical supplies throughout the country.

Chicago Fuse Mfg Co.

Renewable and Non-Renewable Fuses

Chicago **New York**

Sure Protection With Less Fuse Cost

WE can refill your burnt-out fuse cases at a great saving.

SNOW Refilled Fuses are not only inexpensive, but they are guaranteed to equal a new Class A fuse in every respect.

Send us your burnt-out fuse cases, and let us quote you a price on Refilling your fuses. Write today for booklet.

E. W. Snow & Co.
Rochester, N. Y.

EVERY time a fuse blows, your power stops. A fuse is probably the biggest little thing in your plant.

And every time a fuse blows, no time should be lost in renewing same, for every second lost means a money loss.

You want always at hand ready-filled fuses, that can be put in instantly without a moment's unnecessary loss.

SNOW REFILLED FUSES

Industrial Lighting

Equipment for textile mills, factories and plants of every kind requiring the most efficient and effective systems of illumination.

Our facilities enables us to supply on short notice the most improved types of intensified units, as well as a complete stock of G-E Mazda lamps.

Write us concerning anything electrical.

Carter Electric Company

63 Peachtree St., Atlanta, Ga.

LINCOLN MOTORS

Uniform Speed

Uniform driving speed means better fabrics—Install Lincoln Motors in your mills and make more profits

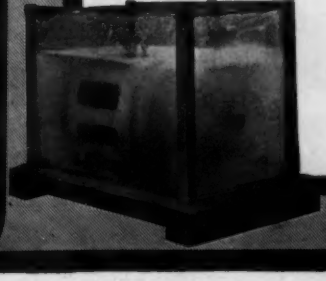
Constant speed under varying loads enables the delicately adjusted parts of your looms to operate at maximum efficiency—allows the fabric to be turned out faster—reduces the number of broken threads—increases your profits.

Installation of 2200 volt Lincoln Motors at Atherton Mills.

The Lincoln Motor did not just happen—it is the product of close study of cotton mill conditions, combined with knowledge of induction motors, possible only to a firm which makes nothing else.

Write for Bulletin on Motors 101-N

"Link Up With Lincoln"



This standard Lincoln Motor operated under water for over 3 years without damage to windings.

The Lincoln Electric Co.

Cleve and, Ohio **Charlotte, N. C.**

New York City, Buffalo, Syracuse — Boston, Chicago, Detroit — Columbus, Pittsburgh, Minneapolis — Philadelphia, Toronto, Canada, Montreal

Agents in other principal cities.

The NATIONAL is the only Fuse with the Renewable Feature

APPROVED

by the Associated Factory Mutual Fire Insurance Companies

HUNDREDS of thousands of dollars can now be cut off the fuse expense of institutions insured in the Factory Mutual Companies, who have heretofore not been permitted to use renewable fuses.

To others, this approval is positive assurance that here is one Renewable Fuse which may be used without sacrificing in any degree the security a fuse must give to plant and equipment.

The rigid tests imposed by the Factory Mutual Laboratories give proof positive that *the NATIONAL is the only Renewable Fuse which meets all the tests of the N. E. C. Standard and embodies all the protection features of the "one time" fuse.* Fuse users everywhere can now *save safely.*

Send coupon for convincing information and prices

Federal Sign System (Electric)
Lake and Desplaines Streets
CHICAGO
649 West 43rd St., New York, N. Y.
Branches in All Large Cities.

The National Renewable element—A powder-packed factory made cartridge—Costs but a trifle.

Please send me complete information on National Renewable Fuses, with prices.

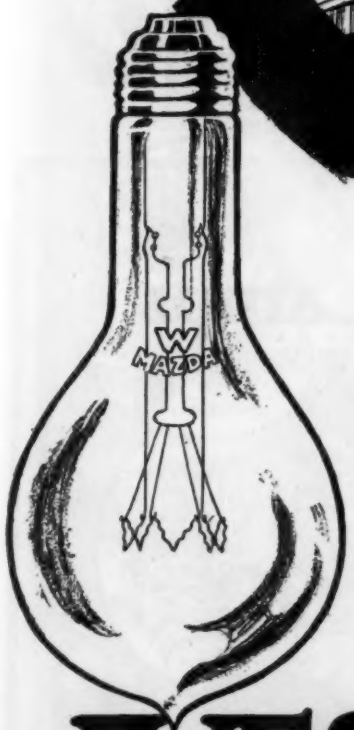
Name_____

Company_____

Address_____

Cotton

—"that's why good lighting pays"



WE quote below a few statements* made by executives of some leading manufacturing and industrial plants as to the value of good lighting:

The Superintendent of a large explosive plant said:
"Since in our munition plants we are operating night and day, the question of lighting is an important one. In fact, we must have good lighting in order to keep up our production, avoid accidents and produce better esprit de corps."

A copper-concentrate manufacturer states:
"We believe that good lighting has done its share in reducing our accidents more than 50%."

A sugar mill operator states:
"Good lighting reduces spoilage to a minimum in our case. While the exact figures of the saving thus brought about cannot be given, it is safe to say that the saving pays for the whole lighting system in one season."

How about the lighting in your factory? Is it an asset as in above mentioned cases, or is it a liability?

We will be glad to look over your lighting system and make suggestions for any improvement that may be necessary. There is no obligation involved.

If you have not read our book on "Increasing and Improving Production" by R. T. Kent, it will pay you to do so. It is sent free to industrial executives.

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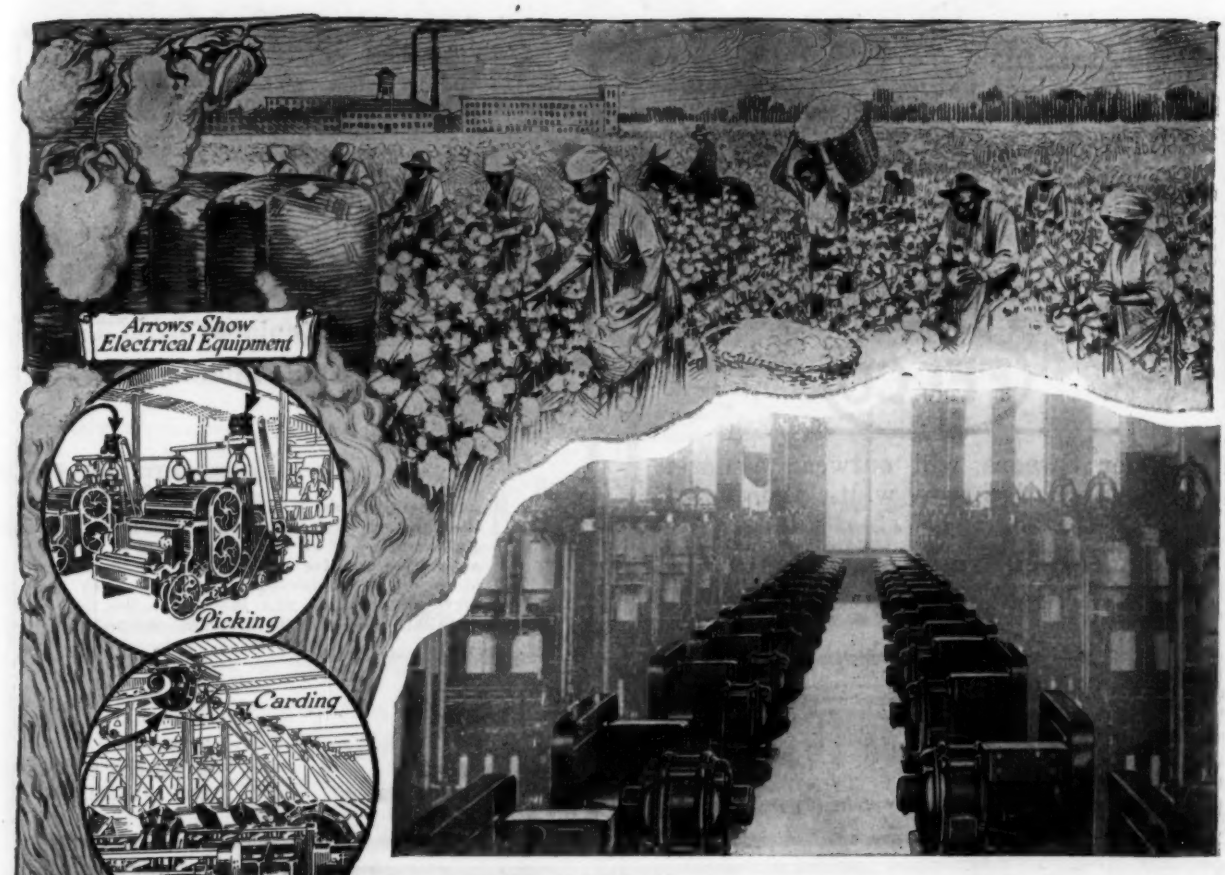

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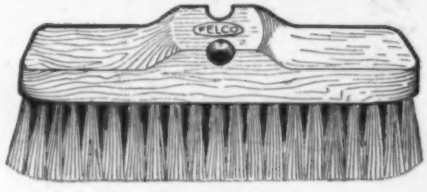

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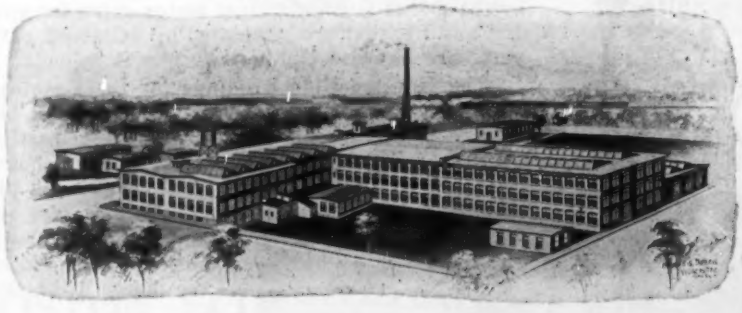

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Published Monthly by

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L. L. ARNOLD, Editor.

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Orders for any change in advertising must reach Atlanta previous to the tenth of the month preceding month of issue, otherwise publishers cannot be responsible for changes.

When changing address, notify us, not the postmaster. Always give the old address as well as the new one.

Member Associated Business Papers, Inc.
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This Issue 4600 Copies.

Volume 83. Number 2.

END OF WAR TIME TROUBLES.

The war is over and let us all get down to business. Every manufacturer has been planning for after the war. Now is the time to begin to put those plans in operation.

COTTON is especially interested in the manufacture of cotton textiles. The indications seem to point to such an expansion as has never been experienced. Demand for civilian goods, which has been placed second to Government needs, is about to surge forward like a mighty wave. The suppressed wants and desires of the world are about to find expression.

The textile industry will meet this demand by improving efficiency and increasing capacity. The dominant faction of the textile industry, the most progressive section has moved into the South. The men responsible for this condition still head the affairs. You can do no better than to cultivate these men.

COTTON is their recognized "home paper." Put your sales message in COTTON and reap the benefit of all the prestige COTTON has been building by its intimate relationship with these progressive men.

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Did you ever stop to think that COTTON is the largest monthly textile publication in the United States devoted to manufacturing processes and problems? Look over the field and you will find this is true.

Therefore COTTON has no competitors. You specialize in your business. We specialize in ours. You do not consider a manufacturer a competitor who scatters his efforts over many products, just because one of these products is similar to yours.

Neither do we consider that publishers scattering their efforts over a field of cotton, silk, jute, wool, and raw stock or yarn brokers and commission merchants are competitors.

With a net paid circulation well over 4,000, guaranteed by the Audit Bureau of Circulations, COTTON offers a publicity service that cannot be duplicated.

The more you investigate, the better we like it. The results of a thorough test will bring you to COTTON stronger and surer than any salesman's oratory. It's the strong dominant publication in the great southern textile field.

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START THE NEW YEAR RIGHT.

About the time you see this the holiday spirit will be in the air. The New Year will be coming in. 1918 has been a year of uncertainties, of hope and the fulfillment of that hope.

The New Year is full of promise, of expectation. COTTON trusts that the old year dying will leave you with no regrets. COTTON hopes that the New Year will end with your every wish fulfilled and with a prosperous experience.

COTTON wishes you and yours nothing but the best and promises to continue to exert every influence constantly to help upbuild the efficiency of the textile industry, particularly the cotton manufacturing business.

ADVERTISE WHERE THE BUSINESS IS.

It was interesting to note in a recent report to the Committee on Statistics of the National Association of Cotton Manufacturers that during the last 20 years the consumption of cotton, in the textile mills located in the cotton growing states, increased 298 per cent. In the same period the increase in the northern mills was 85 per cent.

COTTON is the "home paper" of the mills in the cotton growing states. No advertising campaign designed to cover the cotton textile industry is complete unless liberal space is taken in COTTON regularly.

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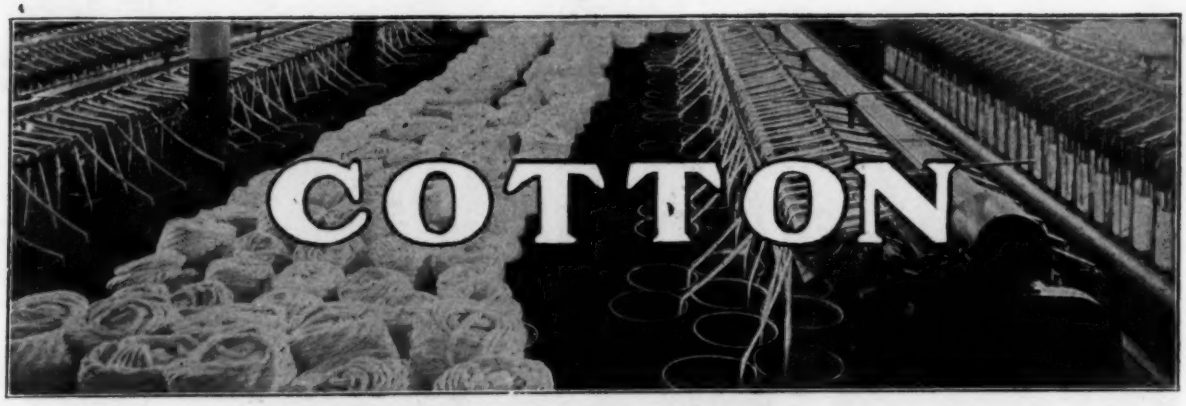

December, Nineteen-Eighteen

Spot Cotton.

The variation between the price of spot cotton, and the price of contracts as indicated by the prices on the exchanges, have been causing much acrimonius discussion during the past several months. The rumors of price fixing that pervaded the trade at one time also came in for a great deal of discussion. Various meetings among the cotton interests have been held and market letters innumerable have been written and distributed broadcast by trade interests telling why cotton prices should be fixed and why they should not. Telling why spot cotton prices should be higher and why they should be lower. Speeches galore have been made by congressmen. Meetings have been called by state governors. But, from whatever the cause, cotton prices declined and about the middle of November, Charles J. Brand, Chairman of the Committee on Cotton Distribution ordered all speculative short selling on the New York and New Orleans Cotton Exchanges to be stopped in order to prevent or check the "violent fluctuations" in the price of the staple.

Congressman Heflin of Alabama, seems to have the idea that the recent declines in cotton were due to a conspiracy "between spinners and speculators." Governor Dorsey of Georgia at a recent cotton conference held at the state capitol in Atlanta, on the call of Governor Manning of South Carolina, also commented upon the fact that while cotton was quoted around 28 cents, cotton duck was selling at $1.00 per pound.

While the Governor made no direct accusation, he left the inference in the minds of his hearers that there was something very rotten somewhere and that the cotton farmer was getting the worst end of it.

Later, on November 24th, the Sunday papers of that date carried press notices of an announcement by the combined governors of the cotton growing states urging cotton growers to hold spot cotton for 35 cents per pound and to sell only sparingly at that price, while they later plan to grow more food stuffs and less cotton.

This magazine and its editors do not pretend to know all the "whys" and "wherefores" of the raw cotton situation. After attending several meetings or conferences where the cotton situation was discussed and after an automobile ride of about 800 miles through different sections of Georgia covering many small concentration points, there are a few self evident facts outstanding to which we believe more general attention should be called.

Stored on the Ground in the Rain and Mud.

Storing Cotton in the Residence Section.

Perhaps the first outstanding factor in the whole proposition is the part played by the politicians, and while it is not intended to in any way question their good faith, their actual knowledge of the situation appeared to be so rudimentary as to cause their remarks in conclusion to appear very misleading. Furthermore, there seems to be a tendency on the part of this class of men (as is perhaps natural) to lean more or less in the direction of the greatest number of votes.

PART OF THE 1500 BALES OF COTTON STORED ON THE COURT HOUSE SQUARE, EATONTON, GA.

It would probably be unfair to criticize Governor Dorsey's comparison of the 28 cent cotton to the dollar-a-pound duck, for the reason that Governor Dorsey did not make any specification as to the kind of duck or the kind of cotton. However, on the day that Governor Dorsey made that statement it would have been impossible to purchase in the open market cotton suitable for the manufacture of the quality of duck indicated by the Governor's rather exhorbitant price for any thing like 28 cents a pound.

Another speaker at this same conference, in the course of his remarks referred to the Governor's comparison and stated that a cotton manufacturer acquaintance of his had advised him that four yards of "such fabric" could be made from one pound of cotton and therefore it was easy to see how cotton manufacturers could pay their immense dividends of 200 per cent and more, simply because they were buying this raw material at "below its cost of production" (presumably 28 cents) and converting each pound into four yards of finished fabric for which they receive "one dollar per *yard*." Continuing his remarks this gentlemen said, "Gentlemen of the ju—, er-r-gentlemen," and then proceeded to introduce certain resolutions and indicated as to why in his opinion these resolutions should be adopted; also blaming people at Washington, particularly the Chairman of the War Industries Board, for a large part of the cotton price decline.

Most politicians are attorneys. Perhaps we might better say lawyers. Their practice at the bar and in addressing the jury naturally leads them to the making of striking statements intended to impress the ears of the men in the jury box, rather than to the presentation of cold facts obtained by a careful analysis of the situation in hand. Such was the case at this particular conference. Governor Dorsey's cotton prices were a little on the low side. His duck prices were doubtless a little on the high side. Then the other speaker in question made the emphasis a little stronger by manufacturing "four yards of such fabric" and selling it at a *"dollar-a-yard"* instead of *"a-dollar-a-pound."* In parenthesis it might be added that the remarks of each gentleman were greeted with wild applause on the part of the cotton growers present. It was evident that these remarks had struck a responsive chord in the minds and hearts of these cotton growers. They were ready and willing to believe that the cotton manufacturers were a group of rascally grafters who were buying their cotton at "below the cost of production" and "selling it to the government and others at exorbitant prices."

A little common sense and ordinary investigation on this subject would easily have demonstrated the fact that the cotton manufacturers were not buying cotton at the price indicated and the prices at which they were selling, regardless of the kind of goods they were manufacturing, was placed by the government price fixing committee and based

A MUDDY STREET IN MONTEZUMA, GA.

A MIDDLE GEORGIA HOME.

upon the actual cost of the production of these goods, with a profit added, which in the minds of the price fixing committee of the War Industries Board was fair and equitable. If Governor Dorsey did not know this, he could easily have discovered the fact in an investigation lasting ten minutes. And this same statement would apply equally well to every other speaker we have heard condemning the cotton manufacturers, or spinners as they prefer to call them, when making condemnatory remarks concerning them. Conspiracy? Bosh!

As we see it, the greatest factor behind the slight decline in spot cotton prices (and if any believes that this decline is anything but slight, just let him get out into the open market and buy spot cotton in quantities), is the slowing up of the actual demand. This slowing up in demand may be due to several causes. One cause that has been unanimously agreed upon is the lack of export demand owing to the shortage of bottoms. With the unquestioned ability of the Allies to conquer in the World War, which

COTTON BESIDE THE ROAD IN THE SECTION NORTH OF ROME, GA.

became evident a few weeks ago, it was but natural that manufacturers would begin to slacken in their demand for raw material, because it was easy to foresee that in all probability the government and its allies would cancel many contracts before their completion, and no manufacturer would care to have his warehouses full of high priced cotton and take his chances in the open market for securing civilian orders at good prices that would compensate him. Still another factor in this proposition, which is particularly applicable to the cotton manufacturer of the South, is the very evident intention and ability on the part of cotton planters and merchants in the South to hold their cotton for high prices.

In a previous paragraph we have made reference to a recent trip through some sections of Georgia. Everywhere cotton was in evidence; in the fields, unpicked; on sheets ready to be taken to the cotton house; and on the porches of many small homes where the seed cotton was thrown in piles to partially protect it from the rain. This late harvesting of the crops is no doubt due, in a large extent, to the shortage of labor. But what happens after the cotton is ginned? Frequently such cotton is not sold, but is hauled back home and thrown out on the ground in the front yard, or by the side of the road, to await the coming of a 35 cent price or a 40 cent price, or any other price that may be in the mind of the individual owner. In a drive of 90 miles, 41 farm houses, large and small, were counted where cotton already baled was piled out on the ground in quantities varying from one bale to ten or a dozen. In the smaller concentration points not only were the warehouses full, but many of the streets were also utilized for storage purposes. At Eatonton, Georgia, approximately 1500 bales were standing on the ground in the square around the court house. Photographs were made at points south of Macon, and north of Rome as well as at many intervening points, some of which are reproduced herewith. These things all indicate a determination on the part of the planter to hold his spot cotton for his own price, even before the urgent resolution of the governors of the cotton growing states that was published, as indicated, on November 24th. The photographs from middle Georgia which are reproduced herewith were made on November 15 and 16, while those in North Georgia were taken during the following week.

Inquiry developed the statement that warehouse men at concentration points had advised farmers not to take their cotton to town unless they desire to sell it, as warehouse facilities were entirely inadequate. All the local people talked with in the middle Georgia district advised

A SIDE STREET IN A MIDDLE GEORGIA VILLAGE.

that, in the Montezuma section, for example, the people did not have to sell their cotton as they raised it just for the fun of raising it. They made an enormous profit on their peach crops during the current year and anything accruing from the cotton was "velvet" and it could be held or sold as best suited the owner. Many specific instances were stated that lead us to believe that the statements made were undoubtedly true.

In another section of the state we were told of a man who had a large quantity of cotton in storage upon which he had borrowed considerable money. When cotton was selling at 36 cents a pound, friends of this man urged him to dispose of his cotton, but he steadfastly stood out for the 40 cent price. Naturally, with the receding of the market, men of this type feel that someone is responsible for their paper loss. Such men also see the possibility of the returning strata of high prices, if they can only induce their breth-

ren in the cotton growing centers to do likewise. This accounts for much of the propaganda work that has been going on in the southern states for the several weeks past. Whether or not each one of these many thousand cotton growers and merchants will be able to sell his holdings at the exact and ultimate top notch of the market remains for the future to disclose.

However, Fuller E. Callaway, of LaGrange, frequently tells in his homely but striking manner some very pertinent facts. One of his statements about the cotton speculator which he made several years ago (and it matters not whether the cotton speculator speculates in futures or speculates in spots), was to the effect that the average speculator was like the average pig. He is not satisfied to get two feet in the trough, but he wants to get in the trough with all four feet and he generally succeeds in spilling the swill.

COTTON as a magazine has never attempted any market prediction, and continuing that policy, none will be made in this instance. The foregoing observations are presented to the cotton manufacturing industry at their face value. The manufacturer may place upon those observations his own individual construction of what the future will bring forth, and again paraphrasing our friend Callaway "whatever decision is arrived at in this connection will probably be wrong."

The Columbus Convention.

The convention of the Southern Textile Association which was to have been held at Columbus, Ga., on November 15 and 16 was postponed two days before it was due to open because of the prevalence of influenza in certain nearby southwest Georgia districts. It was deemed advisable by the officers of the association to postpone the meeting indefinitely and in all probability the semi-annual meeting for this year will be dispensed with entirely. Some few people assembled at Columbus owing to not getting notice of the change in time, but there were enough present for companionship and most of them put in their time visiting the local mills before returning to their homes.

A notable address was to have been made before this Association by Frederick B. Gordon, president of the Columbus Manufacturing Co., at Columbus, Ga., and former president of the Cotton Manufacturer's Association of Georgia. This address was entitled "Mill Workers and the War," and contains the story of the labor union crime against Columbus. It was so worth while the officials of many manufacturer's associations of the southern states have had it printed in pamphlet form for distribution among their membership. The weekly textile newspapers are also carrying it in full. For this reason, it has been deemed advisable not to reproduce it in this number as would have been the case if the convention had been held. However, if any subscriber of COTTON is desirous of securing a copy of this address we shall be glad to aid him in securing a copy if he will send his request to this office.

In this address Mr. Gordon predicts that "at the end of the war the cotton mills of the South will stand absolutely for their full legal right to operate that industry on the non-union basis." In addition to Mr. Gordon's prediction he closes with this prophecy: "That the industrial South, as a whole, will never while this country remains a republic, allow itself to be bound hand and foot, and virtually gagged politically, as is the industrial North to-day, by that thing that seeks to stab in the heart that inherent right of selective employment belonging to every individual, firm or corporation in this country. That unholy, foreign born, un-American, socialistic, despotic thing known as labor unionism."

MILL MEN FORM LOCAL ASSOCIATION.

One of the happy events of the meeting was the formation of the Columbus Textile Association which is a local organization of superintendents and overseers. Fifty-four charter members were present in the assembly hall of the Chamber of Commerce on Thursday evening, November 14th, at 8 o'clock, when the preliminary session was called to order.

Treasurer Paul K. McKenney of the Swift Mfg. Co. was nominated as temporary chairman. He introduced C. W. McSwain, the textile director of the Columbus schools, who spoke along educational lines. Other talks were made by Superintendent Davidson and Assistant Superintendent Revere of the Eagle & Phenix Mills, Superintendent W. J. Holden of the Meritas Mills, L. L. Arnold, the editor of COTTON, and others, including the superintendent of the public schools of Columbus.

The association was then formally organized with C. W. McSwain as president and William T. Farley of the Meritas Mills as secretary and treasurer. Regular meeting dates wer arranged and a meeting place provided.

The purposes of the association are purely educational.

Americanization Spells Efficiency.

The process of developing the vast foreign-born population of this country into 100 per cent Americans is a move in the interest of efficiency. Formerly left to the "welfare worker" as part of an altruistic movement for the benefit of the weak and oppressed, Americanization is now considered seriously by industrial leaders as an aid in promoting efficiency. It is handled as an engineering problem ("Man-Power Engineering" it is termed), and has reached the stage where results can be shown and figures given to back them.

The November issue of the Efficiency Journal, New York, was devoted to this topic, and contained articles on Americanization as applied to industry by authorities on that subject. Frank Trumbull, chairman of the board of directors of the Chesapeake and Ohio railroad, John E. Otterson, first vice-president and general manager of the Winchester Repeating Arms Co., and J. A. Beatty, educational director of the American Rolling Mill Co., contributed valuable papers that gave working plans for plant Americanization.

As the teaching of English to the foreigner is the first step toward his complete assimulation with America, this subject is handled by Sarah Elkus, supervisor of continuation classes, New York City board of education, who is conducting classes in more than thirty factories, teaching English to adults.

Other articles bearing on Industrial Americanization are contributed by Commissioner P. P. Claxton, United States Bureau of Education, Frances A. Keller, assistant to chairman, National Americanization Committee, and other experts in educational and industrial fields

It was a convention which would have afforded interest for anybody that The National Association of Cotton Manufacturers held on Oct. 31, Nov. 1 and 2, at the Copley-Plaza Hotel, Boston. Although postponed two weeks on account of the epidemic of influenza, the programme lost nothing in essentials and the attendance showed no ill effects from the delay. The matters taken under consideration in the business sessions were of national importance, the only thing of a technical and purely textile nature being an address on "Corn Starch in the Textile Industry," by Dr. W. R. Catheart, technical director of the Mill and Paper Division of the Corn Products Refining Company.

Repeated mention of the labor problem was perhaps the feature of the convention from a business standpoint. Emphasis upon this problem was laid by the arrangement of a group discussion on "Stabilization of Labor in Wartime," but references to the question were not confined to this discussion. W. Frank Shove, president of the Pocasset Manufacturing Company, Fall River, and popular president of the association, mentioned the problem in the opening address of the programme and B. F. Harris, banker and publicist of Champaign, Ill., mentioned the serious situation of the present and facing the future in regard to labor when he spoke later at the banquet.

Address of the President.

Following the call to order on Thursday, Oct. 31, at 7 P. M., Mr. Shove presented the president's regular address. This alluded to the importance of trade organizations and the active programme of The National Association of Cotton Manufacturers. It then attacked the question of labor in a frank and fearless way. The address, in part, follows:

"The magnitude of the forces contending in the colossal struggle in which we are engaged is beyond human comprehension, but one fact stands out in strong relief—industry is of more importance in the present war than it has been at any other period of the world's history. Our armies in France are performing miracles of strength and valor, but without the full and earnest support of us who have remained at home all their sacrifices must go for naught. The debacle of the Russian army on the eastern front is an impressive example of what happens when industry fails to support those who are fighting to sustain order, and any army which loses the support of the agricultural and manufacturing interests at home must surely meet the same fate. The liberty of the world is at stake and industry must not fail to do its part to save it.

"And in order to accomplish the greatest results the separate units in an industry must act in accord. Manufacturers have long recognized this, but our legislators have made combinations illegal and have thus, to a certain degree, prevented them from reaching the highest possible industrial efficiency. We all saw the folly of this when, as a result of the war, the demands upon industry became so great that no single corporation in any line could begin to supply them. The single unit was necessary, yet illegal. The administration undertook to overcome the difficulties caused by a multiplicity of heads by either seizing the property, as in the case of the railroads (and putting into immediate practice methods forbidden to private owners), or by attempting to deal with whole industries through, first, associations, and later, War Service Committees appointed by associations. Thus the government recognized the importance of trade organizations, and the service which the latter are rendering to their members far surpasses that possible in normal times.

"Our own association has, during the past year, worked in close conjuction with the various government boards and officials, and has rendered, I believe, both the country and the industry inestimable service. Our activities have been so varied and so continuous that, although many of the members are aware of a portion of the work undertaken, I feel that our efficient secretary is the only person familiar with all that has been done through our Boston, New York, and Washington offices, and since his report is extremely brief, I want to take this opportunity to call to your attention some of the results which have been attained and some of the movements which are now under way.

"The movement for the use of acceptances in the purchasing of raw cotton and the proposal to establish a chain of warehouses, instituted by our cotton buying committee, are possibly the most important, and will have perhaps the most far-reaching effects of any of the association's activities of the last few months. Immediately after our last convention a conference was held in New York at

which cotton manufacturers, shippers and bankers discussed the possibility of increasing the use of bankers' and trade acceptances in the purchase of raw cotton. Although the meeting passed a resolution which merely recommended the use of acceptances, you will all be interested to know that many mills have already begun to purchase cotton by this method, and that acceptances based on the sale of cotton are becoming more and more common in the New York acceptance market, while a discount corporation which will deal principally in cotton paper is now in process of formation.

"Closely allied with this acceptance movement is the plan to establish a chain of cotton warehouses in both southern and northern ports, such warehouses to be under the direct control of the secretary of agriculture and to issue warehouse receipts guaranteeing the quantity and grade of cotton stored. Such receipts would furnish the very best collateral, and, if attached to trade acceptances, would immediately put the latter into the highest class of commercial paper, regardless of the financial standing of the drawers or acceptors. This would not only remove the main difficulty raised at the New York meeting regarding the use of acceptances, but would tend to stabilize the price of cotton—an end which is very desirable. Moreover, such warehouses in the North would probably result in the establishment of large spot markets here, and would also prevent a recurrence of shortages of cotton due to transportation difficulties.

"Another of our important committees, that on Foreign Trade, was instrumental in influencing the government to take steps which led to the restriction of exports of cotton to so-called neutral countries which were forwarding their imports to the Central Powers. Upon the announcement by the Price Fixing Committee of the National Council of American Cotton Manufacturers that the prices fixed for domestic trade were to apply also to exports, the chairman of the committee immediately took up the matter with the secretary of the price fixing committee and succeeded in getting a ruling to the effect that exporters might add to the price fixed for the sale of goods in the United States, mill delivery, a fair charge to cover the cost of delivery at New York or Boston, the cost of handling, additional risk and additional cost of solicitation, and such other items as might reasonably be incurred. The committee is in close touch with the development of export trade, which is becoming increasingly important, for when the extraordinary war demands of the government are withdrawn there will be a large over-capacity in this country, which will become a serious burden unless the export trade is greatly increased over its pre-war figures.

"The matter of tariff is of course in abeyance for the present, but your committee on tariff and taxation is collecting all possible information in regard to the subject in order that when the time comes for a revision they will be prepared to discuss the matter intelligently with the tariff commission at Washington.

"The committee on research is planning a work which, if brought to fruition, promises to be of great and lasting importance to the industry. Our knowledge of the cotton fibre and the chemistry of textile manufacture is still very incomplete. A provisional committee of research and education for the cotton industry in England has evolved a very complete plan and already started research work in that country, and, if America is not to fall behind our brothers across the water, we, too, must soon take steps in that direction.

"Another matter which promises to be of far-reaching importance to the cotton manufacturer is the recommendation recently made by a special committee of the Railroad Administration, as a result of the activities of your transportation committee, to the effect that a differential freight rate be established on shipments of cotton compressed to a high density. This means that practically all cotton shipped next season will be in cars loaded to one hundred bales per car instead of seventy-five bales as now, and should do much to relieve the usual freight congestion. The committee has also kept in close touch with the Coastwise Steamship Advisory Comittee and has arranged for a number of special shipments of cotton direct from southern to northern ports.

"Still another matter to which I would call your attention is the activities of the membership committee. The number of active members has increased to 625 and the association now has about 170 sustaining members. These sustaining members, whose dues are based on twenty-five cents for each thousand dollars of mill payroll, are really carrying the financial burden of the association, and it is very important that more mills should take this form of membership. The president of the American Association of Cotton Manufacturers recently informed me that practically all of the southern mills were members of the American Association, and as we are cooperating with them through the National Council, in a great many matters which are vital to all manufacturers, we feel that all textile mills in the North should be members of the National Association.

"The stabilization of prices by government action has of course changed the whole trend of the cotton trade, but, so far as I can see, the original object—the reduction of prices to the ultimate consumer—has not been accomplished. Manufacturers' prices were fixed some time ago but second hand distributors' figures have only recently been fixed. Reductions to and by retailers may follow but such a result is not yet apparent.

"With the price of manufactured goods fixed there is of course none but a selfish reason why the raw material price should not also be fixed. In fact the establishment of the prices for goods first and raw material afterwards(if that desirable object is ever obtained) is one of the most foolish examples I know of placing the cart before the horse.

"The labor problem is perhaps the most perplexing one facing the manufacturer of today and the labor committee of our association is fully alive to the difficulties to be surmounted and the importance of the questions to be solved. The shortage and uneasiness of labor are the two outstanding features of the present situation and methods to overcome both these have been suggested by your committee. With mills running only about 75 per cent of capacity because of the shortage of labor and an increased supply not being available at present, they have recommended that the present immigration laws be further relaxed and a supply of labor attracted to this country. The War Labor Policies Board has announced its intention of standardizing wages and occupations, in order that the present high rate of labor turnover may be reduced, and, in the hope that such a step will result in a more stable market, the board has been requested to undertake this work in the cotton mnufacturing industry as soon as possible.

"The principal difficulty is in the obtaining of sufficient labor to keep our plants in operation. Enlistments and army drafts are of course the principal causes of the labor shortage coupled with the tremendous demands for goods, but in my opinion labor is not by any means exerting itself to the limit in an effort to keep the wheels of industry revolving at the maximum speed. This is a hard thing to say, but I believe it to be true. Of all the inhabitants of the earth the people whose labor produces the least reward are the most industrious. In the colder regions the husbandmen must work from daylight to dark to get little more than a bare living from the soil, and for that reason the temperate and frigid zones produce the hardy, industrious peoples of the earth. In the tropical regions it is hardly necessary to scratch the soil in order to obtain abundant sustenance for life, with the result that indolence prevails, and this state is paralleled to some extent by the present condition of the labor market. Wages all over the country are so high that—in spite of the high price of commodities—it is not absolutely necessary for manual workers to labor strenuously for the full weekly hours in order to make enough to live comfortably, and the tendency of the worker is to work in a much more leisurely manner than formerly, or else to seek extra time off. This beyond a doubt is a great handicap to industry—wages have reached so high a level as to destroy the incentive to strenuous work made necessary by lower wages. Only because of war demands is it posible to blame labor for this situation, for, speaking quite impartially, the labor element has just as much right to leisure as any other class but, because of the vastness and gravity of the struggle in which we are engaged such slackness at the present time might be stigmatized as criminal. If our operatives could only be induced to work to the limit of their capacity now, being content to save their extra earnings for expenditure when the national necessity to labor will not be so great or so vital, very great strides would be made in the solution of the labor difficulty.

"Another and still more vital problem is what I call the menace of the unions. It is no use mincing matters, gentlemen, union labor has not acted and is not acting in the manner necessary to the life and welfare of the nations allied against the kaiser and his underlings, the miserably mean, depraved, woman defiling, baby killing, barbarian butchers of Europe.

"On sadly too many occasions have we seen the national necessity exploited by the labor unions to extort higher and still higher wages and shorter hours of labor for groups already well paid and well treated. Time and again have different unions threatened to strike and actually struck work without adequate reason and on the most trivial pretexts the only possible reason being that they knew employers were hopelessly handicapped in the fight by reason of the national need.

"A law making the arbitration of disputes compulsory and the calling of strikes a criminal offense, for the duration of the war would have been of untold benefit to the nation for the past eighteen months and would be for a good many months to come, but unfortunately our government has not seen fit to pass such a measure. A long step in the right direction was made by our President a few weeks ago when the Bridgeport mechanics were told, in effect, that they would have to stay at work or be forced into the army, but action like this should not be left to individual cases—the whole nation should be subject to a law of compulsory arbitration and striking be a criminal act.

"Sooner or later this menace of the unrons will have to be met and defeated or it will undermine the whole commercial structure. By reason of their undeniable success in obtaining benefits for their members they are rapidly growing stronger, and, what is worse from our point of view, there is no real, organized opposition. As yet no serious attempt has been made to apply the principle of the closed shop to the cotton manufacturing industry, but the signs of the times are that the day is not far distant when an attempt will be made by the unions to force the employment of nothing but union labor in our mills. Are we taking any steps to prevent this? At the present time the majority of our workers are outside the unions but more and more members are gradually being enrolled, so that the day will inevitably come when the unions will be

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able to coerce otherwise indifferent or unwilling labor into membership.

"This principle of coercion, as you well know, has been applied on every hand, and in hardly any instance has assistance been given by employers to workers who did not really wish to join the union. Some support will have to be given to non-union labor if the commerce of the country is not to be ruined by the inordinate demands of the unions. At the present time non-union labor in a number of industries is between the devil of coercion and the deep sea of lack of support by the employer, while by their acquiescence in the blatantly flaunted coercive acts of the unions it would seem to employees not members of the unions that employers were actually assisting in the coercing of all employees into the unions, whether or not they wished to become members.

"As I said before, sooner or later employers will have to organize to combat this menace and the more concerted our action the greater the success will such a movement meet. Under no circumstances must we submit to any union demand to displace an employee because he is not a member of a union.

"As a matter of fact the subject is one for the joint action of the two great political parties. Legislation should be introduced making the forcing of non-union labor into the unions by any means whatsoever, and the calling of strikes on account of the employment of non-union workers illegal acts. Candidly, it seems to me that from year to year manufacturers in all sections of the community shirk this ever growing problem of aggression by the unions, though finally it will have to be fought.

"The trouble is that each of the two great political parties are too afraid of the loss of votes to take the responsibility for any measure of restriction; if the republican party should introduce any such legislation on the subject the democratic party would consider the opportunity a political trump card, and vice versa. The whole thing ought to be above party politics—it a matter for the combined action of all political parties—a matter for the best brains of the nation, and it should not be tackled in any partisan spirit. A free citizen of a free country should have the right to work without joining a union, and far too many good men who value their freedom of action highly are being forced into various unions against their own wishes and against their better judgment. If employers will not extend a helping hand to them what are they to do? If workers are allowed to combine on matters concerning labor, employers, too must be allowed to combine, for it is only concerted action which will bring any measure of success. Before very long we shall see an extension of the principle of the sympathetic strike on the part of labor, a development which will make an already serious situation still more serious. What are we going to do to combat such a development? My own opinion is that labor must be educated to a broader view of business. Paid labor agitators abound, but we seldom hear of anyone explaining the employers' point of view among employees; left in undisputed possession of the field it is no wonder that labor organizations gain new adherents every day. If only one economic principle were drilled into the brains of the laboring classes—the principle that capital must have a fair return and that all advances in wages inevitably increase the cost of goods, with the consequent negation of any increased earnings—a great deal would be accomplished. The Standard Oil Company and one or two other of our larger corporations are taking various steps by way of arousing the interest of their employees in the problems of their employers and undoubtedly much good will result. Developments of this character are worthy of the closest attention on our part, and at some future date I should like to have your ideas on the subject.

"If we could be a self-containing nation without any foreign trade the matter would be less serious; high wages would meet the prices of high commodities and everybody would be just as well off—and no better off—than with lower wages and lower prices for commodities; but even if we had the desire it would be an impossibility for us to keep out of the markets of the world, and we must enter such markets on a competitive basis. If the reward of labor and the cost of materials is to be inordinately high here we cannot possibly compete successfully in foreign markets. Suppose, for a moment, that Britain and her colonies should institute a measure of protection: how should we be affected? The peoples of the British empire would only buy from us, under such circumstances, goods they could not produce themselves, or goods sold at prices with which their home manufacturers could not compete, and how are we going to sell anything to Britain (with the notable exceptions of raw cotton and wheat) with our costs based on anything like the present high wage scales? Even as regards wheat Canada and Australia are rapidly developing into greater producing countries, while the British Cotton Growing Association has the backing of the British government in its development of new, and the exploitation of existing growing fields in Africa.

"May I here digress a little to say that I consider the action of the cotton growers of the United States, in their attempts to extort extraordinarily high prices for their product, are pursuing a very shortsighted policy, for the reason that such high prices can only add greater incentive to the desire of the British to develop their own cotton growing areas? We ourselves hardly realize what the building of say 2,000 miles of railroad in West Africa will do toward opening up some of the finest cotton growing country in the world. Such development is not only possible but exceedingly probable.

"In the meantime strikes here and strikes there, on one petty pretext or another, present labor in a very humiliating light to anyone with the national interests at heart. This is no time to try to enforce universally the principle of the eight-hour-day along with an increase in wages. I do not consider the demand for an eight-hour-day at all sincere, but merely a pretext for securing higher pay for any hours worked over eight per day—eight hours is not the limit of physical capacity. The whole business savors of extortion and preying on national interests and should be combated to the greatest possible extent compatible with the interests of the country. In any case such procedure can only result in the piling up of national expenditures for war purposes, expenditures which will have to be met sooner or later by the people themselves.

"Another serious development in the labor field is the growing intractability of labor. Inimical to the national interests as we may consider certain actions of different unions, labor, acting without the authority of union executives, has in numerous instances made demands which far outstrip the official demands of its unions and has incidentally defied the authority of its own elected officers. If actions such as this are to be condoned by union executives the day is not far distant when an employer's agreement with the governing body of a union will not be worth any more than the now proverbial scrap of paper. My own opinion is that the present excessively aggressive arrogance of labor far outstrips anything in the last fifty years which might be cited by the demagogue as the tyranny of capital.

"In conclusion, gentlemen, I am afraid I have not thrown any new light on an old subject but I should like to see some action taken in the direction of organizing employers to combat the increasing aggressiveness of labor. The method is a matter for discussion but that some steps will have to be taken before long seems to me to be beyond dispute."

Committee Reports.

After the president's address and previous to a smoker came reports of the various committees. These were treated in substance in the address of the president and with one exception will not be introduced here. That exception is the report of the Committee on Industrial Research which follows:

"Your committee on research was appointed to investigate the possibilities of research along lines intimately connected with the cotton manufacturing industry, and the best methods for carrying out such research, should the association deem its inauguration wise. The members of the committee have given much thought to the problem and have discussed it, both formally and informally among themselves and with specialists in research work.

"It has been decided that, if undertaken, research activities for the present should be confined to the more common technical manufacturing problems, but that, as the work proceeds, the underlying basis principles should be investigated; also, that laboratories already established should be used in preference to the foundation of a laboratory by the association, at least until the work has been carried far enough to indicate that the possibilities warranted the foundation of such an institution.

"It has been found that, in addition to various commercial laboratories which could be used for work of this nature, those of the Massachusetts Institute of Technology, the United States Bureau of Standards, the National Research Council, and especially those of the Lowell Textile School, the Bradford Durfee Textile School and the New Bedford Textile School are available. These latter offer, because of their cotton manufacturing equipment, as well as their chemical and physical laboratories, particularly adequate facilities for the investigation of cotton manufacturing problems.

"The committee, in order to call the attention of the members of the associations to the importance of research work in the industry, arranged to have one session of the recent convention of the association held in New York devoted to a discussion of this subject. This meeting, largely attended, provoked much favorable discussion and comment, and members not present at the time are urged to read the report of it in the annual Transactions.

"There are at present sufficient funds available to inaugurate this work, and arrangements can be made to secure additional funds as it grows in extent and as its value is shown to the industry, but before beginning any specific studies, the members of the committee wish to learn the opinion of the members of the association regarding what lines of work offer the greatest possible immediate benefit to the industry as a whole. We, therefore, submit a list of suggested problems along which researches might well be conducted, with the request that all members carefully consider it and forward to the secretary of the association as promptly as possible any suggestions which may occur to them as to the relative value of the various lines suggested, or indicating new subjects which in their opinion should have consideration:

"1. The effect of compression on cotton, especially Sea Island and other fine grades.

"2. The best method of mixing cotton, amount ahead of pickers, time required, etc.

"3. The effect of mixing different kinds of cotton for special yarn.

"4. Testing out different classes of cotton for special yarns.

"5. Testing for effect of length of staple on strength and elasticity of yarn.

"6. Determination of the extent to which the factors of humidity and tension of yarn enter into the determination of yarn counts by means of reeling and weighing.

"7. Investigation of strentgth of cotton yarn as influenced by twist.

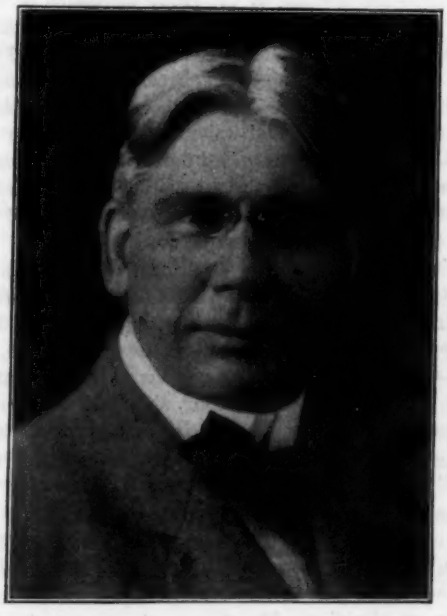
"8. The best product for various grades of cotton and numbers of yarn, and for carded and combed work.

"9. Any general law for drafts and speeds for various numbers of yarn.

"10. The best weights and kinds of combinations of rolls for producing specified products from various kinds and grades of cotton.

"11. Investigations as to the best settings on the card.

"12. An investigation into the manufacture of cotton waste.



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"13. What method of processing the work as regards the arrangement of machines is best for specified work.

"14. Determination of physical means of measuring the relative values of different sizing compounds as applied to cotton yarns.

"15. Investigation of the actual take-up on both warp and filling yarns when woven into cloth.

"16. A study of single carding and double roving, versus double carding and single roving.

"17. A study of contraction in ply yarns.

"18. A study of the relative uniformity of single and ply yarns.

"19. A study of variations in size and strength of yarns for the purpose of discovering any relation which may exist between the two factors.

"20. A study of the relations between twist and strength in ply yarns.

"21. The relation of the gray to the finished fabric. (a) The changes in width and length for a given finish.

(b) The changes in the number of ends of warps and filling for a given finish. (c) The changes in size of yarns for a given finish. (d) The percentage of change in weight for a given finish. (e) The changes of strength of warp and filling for a given finish.

"22. The standardization of methods for converting of cotton goods. (a) Methods of singeing. (b) Methods of scouring. (c) Methods of bleaching. (d) Methods of dyeing. (e) Methods of drying. (f) Methods of regaining width. (g) Methods of mercerizing. (h) Methods of calendering. (i) Methods of 'putting up.'"

The smoker, a feature of meetings of the association, offered the delegates a favorable opportunity to get together early in the convention, as well as to enjoy a good entertainment. The latter consisted of singing ensemble, as well as by Mrs. Helen Barr as soloist; a turn by a prominent monologist and entertainment by other persons; also music by a jazz band.

Friday Morning Session.

Prior to the opening of the group discussion on stabilization of labor, at 10 A. M. on Friday, the ceremony of presenting a special medal to ex-President Albert Farwell Bemis, president of the Bemis Bros. Bag Co., was performed by James R. MacColl, another former president of the association. The medal was given in recognition of his particular services of two years during which he was conspicuous in reorganizing the association for more efficient work and in furthering the promotion of the National Council of American Cotton Manufacturers.

It is significant of the seriousness which cotton men, with other business interests, attach to the labor problem, that Mr. MacColl, in presenting the medal, and Mr. Bemis, in responding, both made allusions to the question. The remarks of Mr. MacColl contained the statement that "We realize that there must be a fair distribution of profits." Mr. Bemis called upon the association to take the lead in attacking this and other problems of the day and even "to forecast the needs of the times."

Thus the opening of the group discussion on "Stabilization of Labor in Wartime" was well prefaced. The discussion was under the chairmanship of James Thomson, who made some introductory remarks upon the evils of the employment situation. The first speaker was to have been Dr. Felix Frankfurter, chairman of the War Labor Policies Board of the Department of Labor, but the postponement of the meeting rendered it impossible for him to keep his engagement. In his place came Henry Perkins, of the same board, and he gave an illuminating address on the work of the organization which he represented.

From this he branched into another subject which is, perhaps, more interesting in the suggestions it holds forth for industrial organizations. He advocated the formation of a representative organization to consist of organizations which express the national aspirations and tendencies of industry. It was his contention that such an organization, with a small representative group at the top, would have power, whereas the various individual associations, chambers of commerce, etc., of today cannot obtain anything like the same consideration. The combined organization would be effective also in removing many prejudices and suspicions which exist.

Next Robert B. Wolf, of the Spanish River Pulp and Paper Mills, Sault Ste. Marie, Ont., took up the labor question from the viewpoint of "Creative Work." He gave theories on the matter of making the work interesting for the employee and backed them up with concrete illustrations of the results. He told of educating the employees in the work which they were doing and of accepting suggestions from the latter as to improvements in methods. Through various means of increasing the interest of the worker in his task, the plant to which he referred made a gain in production from 42,000 to 110,000 tons of pulp per year. Not only that, but the cost was reduced and the quality raised from the poorest known to better than the best imported from Europe.

Much discussion was raised by the address of John D. Strain, secretary of the Associated Employers, Utica, N. Y., who used a hypothetical board to serve his purpose in offering ideas for stabilizing labor. The main idea of his address was that a board created for the purpose suggested should base wages in wartime, or the increase of them, upon the increase in the cost of living. He maintained that the increases in wages and cost of living should be proportionate, except that a "living wage" should be taken into consideration regardless of what the standard may have been before the war.

After several persons had commented upon the paper of Mr. Strain and made expression of their own ideas on the subject, Miss Mary L. Morris, who is newly employed as employment manager of the Sun Shipbuilding Company, Chester, Pa., made an address on true welfare work with the employee. She was followed by Dr. Roy W. Kelly, director of the Bureau of Vocational Guidance, Harvard University, who spoke on functional division of management in industrial plants as it concerns the labor question.

Dr. Charles W. Eliot, president emeritus of Harvard, who was not down on the programme but was present, was called upon after Mr. Kelly. He commented upon the trend of the discussion of the session and then stated that the government, in paying attention to the health of the worker, had taken one of the longest steps forward toward the stabilization of labor. Several women attended this group discussion, as is perhaps not remarkable in view of the active part which they take in the new service departments of industrial plants.

Friday Afternoon Session.

At 2 P. M., Friday, Dr. Cathcart read the paper to which reference has already been made. This paper may be found in the Dyeing, Bleaching and Finishing section of this number.

Another group discussion followed the paper of Dr. Cathcart, this being on "The Trade Acceptance Movement." The subject speaks for itself as regards importance. The chairman was Randall N. Durfee, of Fall River, who prefaced his remarks upon the acceptance movement by repudiating a charge that the prices of cotton goods had advanced out of proportion to those of raw cotton. He ended by favoring the acceptance movement, and spoke in part as follows:

"In a recent article by Clarence Ousley, assistant secretary of the Department of Agriculture, the following statement was made:

"'In the third place the prices of cotton goods have been advancing for four years out of all proportion to the prices of cotton.'

"The article from which the above was taken was given to the press and was in reply to a communication written by B. B. Comer, formerly governor of Alabama and now president and treasurer of the Avondale Mills. Mr. Comer criticized the intention on the part of the recently appointed government committee on cotton distribution to force cotton spinners to use a certain percentage of low grade cotton in order to assist in stabilizing cotton prices.

"This statement was evidently made in order to strengthen the position of the advocates of government fixed prices on finished grey goods who are against the present fixing of a price for the raw cotton. Mr. Ousley is somewhat ignorant of conditions as affecting the proportionate prices of raw cotton and grey goods. The following figures will prove even to the inexperienced that instead of cotton goods prices advancing out of all proportion to the price of raw cotton, the reverse is rather the case and that the South is asking out of all proportion for the raw cotton.

"On November 1, 1914, the year of the 'buy a bale' movement, middling cotton of full 1 1/16 inch to 1⅛ inch staple was purchased at 7¼ cents landed Fall River. At that time 38½ inch 64 x 64, 5.15 grey goods, which have always been considered one of the standards, sold for 4 cents a yard, or .2060 cents a pound. Allowing a small charge for storage and handling, and a net waste of 13½ per cent which is very conservative, cotton at that time represented 42.6 per cent of the price of grey goods. Today the same cotton cannot be bought for less than 34 cents a pound; the grey goods are worth slightly in excess of 83 cents as fixed by the War Industries Board. Using the same basis, cotton today represents 47.8 per cent of the price of the grey goods. From these figures it will be seen that the price of cotton has advanced 4.69 times while cloth has advanced 4.03 times. During this period roll covering has advanced about 200 per cent; brooms have advanced about 250 per cent; starch has advanced over 100 per cent; coal has advanced almost 200 per cent; belting has advanced over 50 per cent; sizal rope has advanced nearly 200 per cent; burlap has advanced about 100 per cent; spinning machinery and machinery repairs have advanced almost 300 per cent; labor, which is a very large item, has advanced between 80 and 100 per cent; local taxes in Fall River have advanced 50 per cent. A representative mill in Fall River reports an actual increase of 192 per cent in the cost of supplies for the last quarter ending September 28, 1918, over the corresponding quarter in 1914. From the foregoing figures it will be seen that the price of grey goods has not advanced 'out of all proportion to the price of raw cotton.'

"For some months past there has been a persistent effort on the part of some Southern politicians, and a certain element amongst the cotton producers, to publish propaganda dealing with the present cost to the South of raising cotton. Even as recently as September 22, Governor Hobby of Texas is reported to have telegraphed President Wilson asking that the price of cotton be set not lower than 35 cents. He further wired as follows: 'Texas is vitally involved in the fixing of a price that will not bring ruin and disaster to the business interests of this state.' The publication of this propaganda was for the purpose of shaping public opinion in the belief that farming costs in the South had advanced so tremendously that ruin stared the Southern farmer in the face unless the price of cotton was kept at almost a prohibitive figure. One may mention in passing that very large amounts of revenue taxes would be avoided provided these high cost figures were accepted. The southern planter is basing all of his costs on the enhanced valuation of everything connected with his crop from the land to taxes and insurance. The manufacturer is compelled to figure his cost on the government's definition of invested capital and *not on the replacement values*, which are in some case four times the amount of the invested capital. Today the conservative manufacturer is handicapped for being prudent. If the manufacturer were allowed to figure his profits on the replacement values it would seem that he was not getting more than a normal return on his investment.

"It seems absurd that prices on grey goods should be fixed while the price of raw cotton should be governed by other forces. Wool, wheat, coal, steel, copper, lumber and other materials have been put under government control; cotton, the gambler's delight, needs no regulation because growers say cotton does not now need price regulation. There is no argument in the comparison of price advances in goods and price advances in raw cotton. Government regulates the price of goods and lets cotton alone. The public can lay this condition to just one cause—politics. The government has protected raw cotton as no other raw material has been protected. Whenever the price of cotton was low the government was called upon to protect the prices: whenever the price was high, the cotton interests demanded that the laws of supply and demand govern. Cotton has always been called king, but for the past few months it has been the whole royal family, and the world is becoming tired of royalty.

"Since our entrance into the war this association has been actively interested in all objects which would serve to increase our efficiency so that we might do our utmost in helping to win the war. The Cotton Buying Committee, which has had several important conditions to meet, has tried to look at them all, primarily, from the standpoint of recommending changes which would help in winning the war, and have placed their own interests in a secondary position.

"The words of Charles Evans Hughes truly apply to the members of the association—'In every permitted field of effort we have toiled, we have given without stint or limit, with no thought of party or of partisan advantage that this war might be won.' Secretary Daniels at our meeting six months ago, in a very stirring address, stated that the whole country was a unit and there must be an end of sectionalism. There was no longer a North or a South, an East or a West. We have never wavered in upholding the administration and using our every resource in the winning of the war. Today Secretary Daniels is touring this section of the country making the most partisan political speeches, not for the purpose of winning the war but to perpetuate the democratic party. New England to a man, is vitally interested in the problems which the next congress must settle. It cannot afford to have these questions settled by the administration which is dangerously near becoming dictatorial.

"Perhaps the most important matter which has come up has been the method of financing the cotton crop. Under old conditions this was a very severe strain on Southern and Northern financial institutions. Your committee has

advocated the broad use of bankers and trade acceptances in financing purchases of raw cotton. This makes frozen capital liquid and gives the maximum use of the same. It has been said that England could not have financed the present war if she had not previously developed this method of financing. France makes use of the trade acceptance in transactions as low as five francs."

Bank Acceptances.

With this introduction, the subject of acceptances was taken up in a thorough manner by an expert on the subject, Morton H. Fry, of Bernhard, Schoole & Company, New York, who said in part:

"The bank acceptance movement particularly in connection with the cotton industry does not seem to have made the same relative amount of headway that it has in other industries. It is, therefore, with particularly keen pleasure that I have accepted the invitation to discuss with you some of the phases of the bank acceptance movement and to bring to your attention certain considerations that seem to me to be of much importance.

"In order that we may have a clear picture of the possibilities of the use of bank acceptances it is necessary to bear in mind the progress which has been made in the development of the bank acceptance in this country. As you know, the acceptance was unknown except in a theoretical way in the United States prior to the establishment of the Federal Reserve System. Immediately upon the passage of the Federal Reserve Act, however, some of our foremost member banks made use of the powers which were granted them and began to extend acceptance credits to their clients for financing commercial transactions. A great many of our states also passed laws enabling state banks and trust companies to accept drafts drawn on them by their clients. The result was that very shortly bank acceptances began to come into the market in fair volume. There also grew up at the same time a number of discount houses whose function it was to discount bills for banks and merchants and to place them among banks and investors who had surplus funds available. This function of the discount houses is one of the most important in the discount market. It enables the merchants to tap the cheapest money markets and provides for the ready transfer of funds from a section of the country where they are the least needed to another section where the demand is pressing.

"It is nothing unusual under present conditions for discount houses to carry portfolios running anywhere from ten to twenty millions of dollars and it is not unsual for a single dealer to sell as many as ten million dollars of prime bills in one day. A remarkable degree of stability of rate has also been attained in connection with this business even under the unusual conditions of finance due to the war.

"Not only has there been a steady increase in the number of institutions accepting for their clients but such institutions have more and more turned to bankers acceptances as the most desirable form of investment for their surplus funds. It is not unusual for some of our large banks and banking institutions at the present time to hold their investment any where from $25,000,000 to $75,000,000 of the acceptances of other banks. A great many of our institutions are now using acceptances as their first line of reserve following their cash items. This is due to the fact that bank acceptances can either be sold in the open market or can be turned in to the Federal Reserve bank at any time and the ready cash obtained in payment therefor.

"The figures which have been cited will give you some idea of the tremendous progress which we have made in the use of acceptances in this country, a progress which has been one of the prime factors for the attainment and maintenance of this country's vastly improved position in financing of the world's commerce. It is an indication in itself of the fundamental soundness of the acceptance idea in connection with the financing of commercial transactions. The adaptability of the acceptance to the financial structure of this country has been abundantly proven.

"While the processes giving rise to acceptances are very well known owing to the educational work which has been done by a great many banks, what are not so well known are the methods which should be employed in turning bank acceptances into cash. In the past it has been the custom for a great many of the merchants using bank acceptance credits to discount the resulting bills directly with the accepting institutions. This, of course, is a perversion of the true function of the acceptance. The fundamental purpose of the acceptance credit is that the accepting bank should lend its credit to its clients, not its cash. Where a bank discounts its own acceptances for its clients it is doing in effect nothing more than taking its clients' single name paper. The acceptance of any bank is not an asset to the bank itself. It is only an asset when it is in the hands of other parties.

"One of the evil effects of this practice is that a reservoir of the bills of an institution is very frequently established in its own hands. When money conditions become tight and an institution wishes to realize on its holdings of its own acceptances it is very frequently not in a position to do so as it must under no conditions be placed in the position of forcing its own bills on an unwilling market. The result therefore is that very frequently an institution finds that under such methods of operation it has actually loaned its cash, instead of having loaned its credit, and has on its hands an obligation that is not as liquid as it purports to be. As a consequence of this practice of having a bank discount its own acceptances for its clients, the Federal Reserve Board has recently taken the attitude or advising member banks to encourage drawers to negotiate acceptances in the open market wherever possible. This, after all, is not only the logical thing to do but it is the most advantageous course for the merchant to pursue. It is not to be expected that any one institution will at all times have a surplus of lendable funds. Therefore, when a client takes an acceptance to his own bank when that bank is not in funds and tries to discount it, it means that the bank will only do so at a somewhat higher rate than could be obtained for the same acceptance if it were offered to an institution that was an eager buyer. This is where the open market comes in. It is through the placing of acceptances in the open market that the merchant is enabled to tap the cheapest money market and it is therefore decidedly to his advantage and to the advantage of the commercial and financial community as well, that instead of discounting bills with the accepting bank he discounts them in the open market. After all there is no necessity compelling the merchant to go to his own bank. There are a number of discount houses both in Boston and in New York who make a practice of buying prime bills at

all times, who buy in tremendous volume and at the closest possible rates.

"I should now like to come back to a statement made before to the effect that the cotton industry on the whole has been somewhat backward in promoting the increased use of bank acceptances. There are a number of industries, such as, for example: the meat packing and tobacco industries, where relatively speaking the acceptance has obtained a very much greater hold. When it is considered that the cotton industry from production to marketing is peculiarly adapted to the use of bank and trade acceptances it is particularly difficult to understand why this should be the case. There is no advantage which accrued under the old system of borrowing which is lost through the use of bank acceptances and there are in addition a number of positive advantages which should influence the members of the cotton industry in changing their form of financing. The primary considerations in times like these and incidentally for a long time to come will be to keep commercial obligations arising from the domestic and foreign trade of the United States in as liquid a form as possible. Particularly during the duration of the war and for a long time thereafter we are likely to experience a tremendous demand for funds for government purposes. This demand will be a concentrated demand and is likely to produce serious dislocations in our financial structure unless our commercial obligations are kept in such form that they are liquid and can be used to bring about the ready transfer of loanable funds from one section of the country to another. It is through the use of bank acceptances and their sale in the open market that this ready transfer of funds can best be brought about, and that the stability of rates which it is so desirable to maintain in commercial borrowings be maintained. The sale of a bank acceptance originating in Boston, for example, in San Francisco, means that the San Francisco bank is lending money to the merchant who is the drawer of the bill. There are periodic occasions when certain sections of the country have surplus funds on hand at the same time that other sections are experiencing tight money conditions. It is during such occasions that the purchase or creation of acceptances in a high money market and their sale in a low money market brings about the transfer of funds from the high to the low money centers and the consequent stabilization of rates and money conditions throughout the country.

"It will, therefore, be apparent that by the greater use of bank acceptances by the cotton industry of the country a real contribution can be made to the common financial good apart from all considerations of the pecuniary advantages which can be derived from utilizing the lowest money markets. Incidentally I should like to point out that the use of bank acceptances in peace times when normal international relationships are restored will be of particular advantage in enabling the merchant to use the cheapest international money market. There is no doubt whatsoever in my mind that foreign banks in the not distant future will enter the New York market as buyers of prime American acceptances. The history of international banking in the past has shown conclusively that the ebb and flow of credits between the nations will at times cause interest rates to be very much lower in one country than in another. It is through the use of acceptances that such a situation can best be taken advantage of in the future. It should also be borne in mind in considering this subject that bank acceptances when rediscounted at one or the other of the Federal Reserve banks form the basis of the issue of our asset currency.

"There will come a time not so many years after the war when business must adjust itself to peace conditions, and when our currency will have to be deflated if the solidity of our financial structures is to be maintained. Bank acceptances, by their nature, are self-liquidating obligations, and therefore they form the safest possible basis for the increased issue of currency. The greater the amount of financing which is done on the basis of self-liquidating obligations the easier will be the process of deflation later on. It is, therefore, heartily to be desired from the point of view of national weal that merchants and bankers endeavor insofar as possible to make an ever increasing use of this instrument of finance in carrying on the domestic and foreign business of the country."

Interest in the acceptance movement was manifested by questions asked of Mr. Fry. John Hollinger, a representative of the National Shawmut bank, of Boston, also was present and answered questions. An address was expected from Ralph H. Mann, president of the Park Trust Company, Worcester, but he accepted the thorough address of Mr. Fry as sufficient for the idea.

Business and pleasure divided the attention of members in the afternoon. The annual golf match for the association cup and souvenir was held on the famous links of the Country Club, Brookline, it being an eighteen-hole handicap event. Albert Greene Duncan was chairman of the committee on the tournament. He awarded the prizes at the banquet in the evening.

R. E. McCausland, of Rockford, Ill., Field Manager for the Barber-Colman Company, won the first net prize, it being a silver loving cup. The best gross score was by E. T. Manson, of Boston, who seems to have a monopoly on leading the cotton golfers. He received the gold medal of the association.

The Banquet.

Friday evening came the fourth session of the convention, the association banquet.

Post-prandial speakers on this occasion were B. F. Harris, banker and publicist, of Champaign, Ill., and Dr. Henry Van Dyke, late minister to Holland. The latter gave an enthusiastic endorsement of President Wilson and his administration of the affairs of war. He aroused his audience by saying that the war would be carried to "absolute capitulation" of the enemy and picturesquely described the work in general of our army and navy, in the latter of which he is a chaplain.

Mr. Harris, who spoke first, made some introductory remarks concerning national politics in which he asserted that the West was "unconditionally for unconditional surrender" and then followed with an address, saying in part:

"Never had a nation such honorable, holy, glorious and compelling cause for war as we have;—never have the rank and file of the people in all walks and lanes of life and business rallied as have our people, with more unselfish unanimity; ready to follow the flag regardless of the bearer only that he be bound for and bounden to national security and honor; ready for any sacrifice for a cause become our very own;—for which we were not 'too proud to fight,' and in which we would not tolerate a 'peace without victory.'

"Yet, while their hearts,—our hearts,— have been opened

to every patriotic appeal, our eyes and ears have not been so credulous nor closed to the fact that there are those who would take advantage of the war with selfish propaganda, perverting it to the purposes of party, cult or class.

"Civilization everywhere today faces two foes;—one the iron might of autocracy and the other, the Bolsheviki, and sometimes under the teachings of misguided and sentimental university professors. We might have thought and worked and lived as an aggregation of individuals but not as a nation. And now, suddenly, we are undertaking the greatest work any nation ever undertook and necessarily, with all its international relationships and responsibilities.

Pitilessly we must analyze our economic, administrative and political weaknesses and our personnel; the forces that are not alone to factor our future but to make a future possible. In love of principle; veracity of mind and word and purpose; in facing facts and knowing just what we want to do, lies our greatest national safety. Our foreign and domestic trade policies are all important, but the home policy is vital and the day of reckoning inevitable and unescapable.

"Almost daily we hear the superficial, misleading phrase, 'make the world safe for democracy.' We cannot make the world safe for democracy, nor can we make the world safe through democracy. It is a question of a type of democratic republic safe for, and under a leadership consecrated to, the people.

"Here,—where, in letter, as in spirit, we are getting away from the principles that made a nation safe for the first time in history, and helped make the world safer, until we began the modification of this republic,—by adding elements both of socialism and autocracy.

"Socialistic democracy, the opposite of autocracy, and possible for a period only in a small group, stands much for license, impulse, demagoguery, anarchy and chaos as the autocracy stands for reaction, oppression, bondage, tyranny, coercion; whereas the republic,—our republic of the United States, the standard of democratic government—was created to exemplify reason, order, progress, justice, statesmanship,—the government administered through representative agents and the legislative branch not dwarfed by the executive, or judiciary.

"The attitude of the autocracy toward property is feudalistic; toward the law, that the will of royal rule prevails regardless.

"The socialistic attitude toward property is communistic; mob-mindedness finally destroying the very property itself, —while it preaches the will of the majority regardless of whether it is based on deliberation, impulse or prejudice.

"The attitude of the republic toward property is that of individual ownership that brings thrift, initiative and respect for law, believing in the administration of justice in accord with fixed principles and established evidence, with strict regard to consequences. It does not stand for 'every man down to the level of the average' but for 'all men up to the heights of their fullest capacity for service and achievement.'

"Thus the fathers, mindful that autocracy brought tyranny and that socialistic democracy eventuated in mobocracy, brought forth the first republic the world had known, and not the least of its emphasis was on certain inherent, individual and inalienable rights.

"But how are we to have and to hold these 'inalienable rights,' that are fast becoming more and more alienable, if we depart from the short ballot that makes for those rights and the long life of the republic? Under the Federal constitution we vote only once in two years and then for but two officials,—president and congressman. Why vote oftener, or for more officers in our other three types of government,— state, county and city? Yet,—all four of these are going on, all more or less simultaneously and continuously, with such confusion of issues and candidates that it's a gambler's game and the public is the prey.

"How far away have we drifted, and how near the rocks in our Ohio and Oklahoma constitutions; in our six-foot ballot of 334 candidates with two minutes to vote it; in our 160 boards and commissions in a single state; in our 62,000 new statutes and 65,000 Court of Last Resort decisions in five years; doubling state government expense in nearly every state in ten years, and spending two millions of taxpayers' money on primaries and elections in a single year of 1916 in Cook county, Illinois.

"Are we not ready to get back to the Federal short ballot and appointive principle?

"Then, too,a new idea of liberty seems to lie in the privilege of spending other people's money. Property is taxed, —not manhood, as the demagogue declaims. Less than 3 per cent of the population paid direct Federal or war tax in 1918,—more than one hundred millions of people paid none of it and 70 per cent of it was paid by five states,—the states with greatest per capita wealth paying relatively but a tithe. This puts another 'mock' in democracy. The real idea of the republic, of equality of responsibility as well as of opportunity; the real first principle to which we must return, is to give every citizen and every state the privilege of paying for the support as well as receiving the protection of the republic.

"The largest national issue that is forming today is whether this government is going to go further and further into state socialism,—as Germany did and is doing,—or whether individualism and with fewer restrictions on business, and those largely of federal nature, will prevail.

"Political ownership or possession and nation operation of the railway systems after the war is unthinkable, and if it should be specified that whiskey and beer are to be freed at the end of the war, why not the railroads,—unless there is a purpose? If the Federal government wants to do its duty in transportation and development it can take over possession and development of the public roads, which neglected function is well within its province.

"In time of peace we never developed an acceptable formula for the division of the profit of efficiency between labor and capital, and we have not made the slightest progress toward such a formula in a year and a half of war. We are obliged to make shift to transport our armies less adequately protected by destroyers; we must hold our lines in France with fewer guns, not because the American people are not willing to pay for more ships and guns, but because we have failed to find a satisfactory formula for dividing the price of ships and guns between labor and capital. Our labor turnover has gone to 50, 300, or even 1,000 per cent.

"One cannot help but feel that much of our headlong and apparently uncalled for government control was a result of an unwillingness of the administration to chance the alienation of labor and to face it fairly and squarely, and

with as little ceremony and delay as it did capital and conscription. We endorse the general procedure but not the delay in getting all of us except labor on a war basis and therein, and in the subterfuge lies my thesis and the origin of what most menaces us.

"By the same token and in the same hands, what is now government control in time of war would become political possession or so-called government ownership in time of peace, with a great political payroll of millions of men and the resulting inefficiency, increased cost and general disorganization.

"As in Germany every laborer was said 'to have a soldier on his back,' so here every citizen would be carrying a much less desirable and heavier political appointee. June 30th, 1916, we had 480,327 Federal employees,—now, over four million.

"At El Paso in April, speaking to a great gathering of railroad men, the over-burdened but not unwilling secretary-director-manager-supervisor McAdoo, said: 'You are all my boys and I don't intend to let anyone kick you arouna for I will defend you to the limit when you are right, and you won't go wrong I am sure.'

"Employees should remember that the republic was the first form of government that gave labor a chance. The worst year for labor in the United States was better than the best year for labor in any other country in the history of the world. The republic was the first form of government that made it possible for the section hand to become president of the railroad; a clerk to become president of a bank; a farm boy to become governor of his state; a rail-splitter to become president of the republic;—not because he was a clerk, a section hand, a farm boy or a rail-splitter, but because he developed body, mind and character sufficient to make him worthy of such responsibility.

"We use the word labor as carelessly and inaptly as the word democracy. We might well substitute the word production, for—the man who works with his hands, the man who works with his head and the man who works with his just accumulations are the three different elements that enter in and overlap and involve each other. We may emphasize production for use and enjoyment as opposed to production for mere profit, but otherwise the three elements stand for equal favor, opportunity and responsibility.

"The good citizen of a republic wants his government to govern and not to be governed, as it was, for instance, in the Adamson law episode,—that transaction being an illustration of the panicky impulse, lack of deliberation and governmental self-respect and control, the legislation for a fraction of a class, that differentiates the socialistic democracy and pandering politics from the republic and statesmanship.

"If we would preserve our republic we must more carefully and practically educate our republicans. The facade of your great public library here in Boston carries the sentence, 'The Commonwealth requires the education of the people as the safeguard of Order and Liberty.'

"As 'Order and Liberty' grow out of service and efficiency we would have our educational system put the emphasis here. Education is looking toward especialized efficiency and it must also Americanize and nationalize, and this it can only accomplish through one language and under one flag.

"Education must be purposeful and that means, among other things, an aroused ambition and with this a larger self-control. An educated people can never be content, and with discontent comes a desire to improve, to equalize one's lot with that of another.

"If education is an enemy of superstition, it is also the leaven of equality.

"The war has taugh us a lesson in this direction. The nation should now say to each youth approaching manhood that, for part of one year or two successive years, he must submit himself for a definite period of instruction and training under direct national supervision and control, in order that three distinct purposes may be accomplished:—

"First,—that he may, in association with youth of like age, get a new and vivid sense of the meaning and obligations of citizenship;

"Second,—that he may be physically and intellectually prepared to take part in his country's service or his country's defense, should occasion ever arise;

"Third,—that specific direction may be given to his capacities and powers, so that he may be better prepared than would otherwise be the case for useful and productive citizenship.

"In the next generation we should never be able to say that of five million men between the ages of twenty-one and thirty-one, sixty-six in each one hundred are physically unfit for the army, and that of three thousand four hundred specially selected men examined for the navy, seventy-two in every hundred were rejected.

"The allied nations are fighting for peace and wherever men gather together they must reaffirm their purpose of accepting nothing short of 'unconditional surrender,'—with peace dictated, not negotiated.

"Until the force of military and economic compulsion brings that surrender and geographic and economic readjustments are provided to help perpetuate that peace, the word 'Kamerad' is meaningless to us, and we must not stop, look nor listen.

"When Dr. Resemeier, for thirty years a Berlin journalist, was asked if the German people could be awakened he replied,—'Nonsense! what these fellows need is not ideas for their brains; they need bombs on their skulls! Help can only come from one place, Bethlehem,—Bethlehem, Pennsylvania. They will cheat you yet, those junkers. Having won half the world with bloody murder, they are going to win the other half with tears in their eyes crying for mercy.'

"There must be a peace without pity for Prussian fiends and overlords, for the world and the deluded, debauched and degraded German people can be free only when the power and influence of the ruling caste is forever broken.

"So with the Archbishop of York, we proclaim,—'Here I stand; I can do no other, so help me God.'

"The nation's goal is not private gain but social well-being, national strength and eternal life. My neighbor's prosperity is my security. The social, economic and spiritual well-being of all,—hand and brain workers alike, to the last man, woman and child,—concerns all of us intimately.

"In the new era after the war there must be more and greater opportunities at the bottom and on the way up, and the responsibilities will be heavier as we near the top. Just as we shall insist that there are henceforth to be no secret treaties and understandings between nations; just

so the 'open book,' above-board, square deal policy must prevail at home. We will look for 'our boys' to help bring about results when they come home commensurate with that for which we have all been fighting.

"We believe that our government can no longer be primarily political, with a drift of socialism, but, firmly founded on principles, must become a great economic, efficient, heart-driven instrument for the better growth, diffusion and protection of a people's welfare. This fundamental and sole object of a republican form of government does not contemplate assuming functions that can as well or better be performed by individual, cooperative or corporate effort, federally supervised and regulated when necessary, and always controlled in vital and universal necessities, such as transportation, public utilities, fuel and food.

"Partisan, political possession or ownership becomes a public, political and economic menace, changing in policy and personnel with every election; lacking the great driving and developing force of initiative, incentive and ambition that has made America's record, and renders less efficient service at uncertain and increased cost.

"A people's government has all it can wisely and safely do,—and more than it has so far been able satisfactorily to accomplish, if it sticks to first principles of the republican ideal.

"The Federal Constitution, the greatest boon to men since the coming of the Master, secures for us certain inalienable rights; that, like our 4th of July, are reaching round the globe.

"But,—next to the constitution, and its preservation against all comers, from without and within—what can be more important; what should be more soberly, seriously and sacredly entered upon at this great moment in the world's history,—when we are fighting for a conclusive world peace,—than the preparation of a national, human, dynamic program of progress and promise for all our home folk, founded on the fundamental principles of the republic,—and new ideals?"

Saturday Morning Session.

Chief interest at the closing session of the meeting, held on Saturday morning, was the report of the Resolutions Committee. The committee offered resolutions on the tariff, reconstruction, exports, a national budget system and taxation, which were adopted as follows:

"Men yot yet old clearly recall the demoralizing conditions which existed while the Wilson Tariff Bill was in force from 1892 to 1895. They also vividly remember the idle mills, the army of the unemployed, and the public soup houses which followed in the train of the Underwood tariff enacted in 1912.

"We firmly believe that free trade and a low tariff will reduce our working people to the scale of wages and of living which exist in competing countries. Having in mind the millions of returning veterans who must soon find employment, and having also in mind the fact that labor now employed in war industries at abnormal wages must return to other pursuits, therefore be it

"Resolved, That The National Association of Cotton Manufacturers respectfully and earnestly urge the restoration by Congress of the historic policy of adequate protection, to the end that the Nation may be properly fortified to meet the new and exacting demands of peace.

"Resolved, That immediate consideration be given to the study of reconstruction necessities and that plans be perfected for the requirements of readjustment, so that, when peace is declared, the country may be ready to march forward, inaugurating policies for the readjustment of our domestic and national affairs.

"The National Association of Cotton Manufacturers strongly recommends that a non-partisan joint congressional committee on readjustment be created for the purpose of investigation of all phases of reconstruction requirements and to recommend to Congress such legislation as may be necessary to speedily accomplish the transition from a war to a peace basis.

"Whereas the textile machinery of the greater part of Europe has been destroyed or is unable to supply the usual civilian demands of even these countries much less those of neutral countries;

"Whereas the people of the United States, as compared to those of the rest of the world, have an ample supply of clothing, and

"Whereas exchange to countries supplying our Allies and ourselves, particularly to South America, Spain and Australia, is seriously against the United States, and

"Whereas cotton goods have a high value per cubic foot which, owing to the shortage of available ship room makes such goods most desirable freight and thus best conserves the gold supply of the United States, be it

"Resolved, That the National Association of Cotton Manufacturers recommend to its members that they seek to increase their exports to those countries mentioned, and to those other countries where essential clothing is required, and recommend to the committees of this association that they urge upon all government departments their assistance and cooperation in furthering this end.

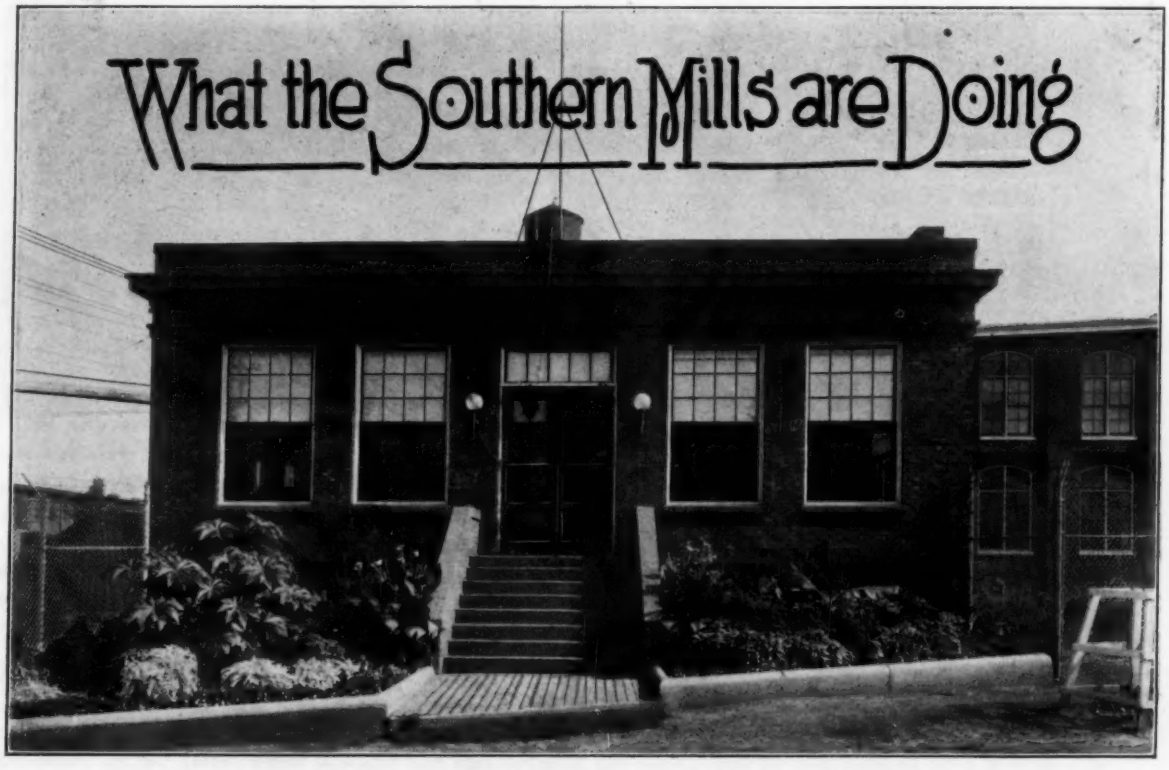
"Resolved, That we urge upon our senators and representatives in Congress the immediate creation of a budget system, believing that it will lead to more economic systematic expenditures of the vast sums annually paid into the treasury, stimulate greater enthusiasm and cooperation among our people in winning the war in which we are engaged, and be a vital factor in preparing for the struggle for commercial and industrial advancement which will surely confront us when peace is declared.

"The National Association of Cotton Manufacturers, in convention assembled, is pledged by resolutions already passed at its various meetings since hostilities were declared, to any policy adopted by the government that will aid in winning the war.

"Recognizing the need for vastly augmented revenue, the association believes it is essential not merely to secure the immediate requirements of war expenditures, but to select methods of war taxation that will protect industry, enable it to expand its operations in proportion to the needs of the government and our allies, and fortify itself for the commercial struggles of coming peace.

"Therefore, Be It Resolved, That the National Association of Cotton Manufacturers endorse the petition to the Committee on Finance of the Senate of the United States, filed by the National Industrial Conference Board on October 16, 1918, and emphasize in such endorsement the position taken in this petition that excessive taxation be not levied unless sufficient allowance is made for the shrinkage in inventory values which the present abnormal conditions have forced to an inflated level."

What the Southern Mills are Doing



THE NEW OFFICE AT THE THOMASTON (GEORGIA) COTTON MILLS.

The new dyehouse of the Massachusetts Mills in Georgia at Lindale, Georgia has been practically completed. The building itself is entirely complete and many of the machines are already in position. Other equipment is yet to arrive. The building is a model dyehouse of reinforced concrete with suitable drains and other appurtenances, including filters for the water to be used and a suitable filter for the waste water to keep from contaminating the stream into which this waste water will run. Modern steel window sash construction is used with ribbed glass lights and the interior of the first and second stories of the dyehouse and winding department are beautifully lighted making it a model from the standpoint of construction and operation. Shower baths are provided in the basement for the operatives and every effort has been made to make it as thoroughly dry, clean and sanitary as any other part of a textile plant.

Another recent innnovation at the Massachusetts Mills is the addition of several thousand feet of Cyclone property protection wire fence, which has greatly improved the appearance of that part of the plant to which it has been applied. Part of this work is still under construction.

A further improvement at the Massachusetts Mills is the installation of a new lighting system in a number of departments. This system is along the lines indicated in the recent articles in COTTON and consist of high duty Mazda lamps and reflectors.

The Mecklenburg Cotton Mills, of Charlotte, N. C., has been sold to the McCandliss interests of Salisbury, N. C., according to recent press reports. This industry until recently was owned by business men associated with Baldwin and Leslie of New York. This mill was built by Robert L. Tate and for some time was owned by the Coleman interests of Whitmire, S. C. During the past year the property has been under control of Alex Long of Rock Hill, S. C. It has been chartered as the Mecklenberg Mill Company with a capital of $400,000.

Announcement has been made from Charlotte, N. C., that the Robinson Mfg. Co., of that city has been sold to the Robnison Spinning Co. This is a company organized with an authorized capital stock of $200,000. The new company is being financed by S. M. Robinson and John Rankin of Lowell, N. C.

Another change which has recently taken place among North Carolina mills, is the announcement that the controlling interest of the Pilot Cotton Mills Co., of Raleigh, N. C., has been purchased by a syndicate backed by Con-

A CORNER OF THE WILLINGHAM COTTON MILLS, MACON, GA., WITH THE OFFICE IN THE DISTANCE. THE NEW FENCE SHOWS PLAINLY IN THE FOREGROUND.

ANOTHER VIEW OF THE TRUCKS AT THE MASSACHUSETTS MILLS SHOWING THE SIDE BARS IN PLACE.

verse & Co., of New York City. W. H. Williamson, the present president and treasurer still retains a substantial interest in the property it is said. The personnel of the mill management will continue as heretofore.

The Willingham Cotton Mills at Macon, Ga., have recently enclosed the entire plant with a woven wire property protection fence. Some new buildings are also under construction just back of the office.

The Manchester Mfg. Co., of Macon, Ga., has recently enclosed the entire plant with a new Cyclone woven wire property protection fence, greatly improving the appearance of the property and greatly increasing its safety from intruders.

TWO OF THE HEAVY DUTY 5-TON WHITE TRUCKS HAULING COTTON AT THE MASSACHUSETTS MILLS IN GEORGIA.

The Abingdon Mills at Huntsville, Ala., are reported to have filed a voluntary petition in bankruptcy, listing assets of $1,500,000 and liabilities of about $2,000,000. Walter I. Wellman, a stockholder of the West Huntsville Cotton Mill, has been appointed receiver. The failure of the company is due to the suspension of operations caused by the influenza epidemic. The company is just completing a 175 x 105 foot addition to its plant to be used for the twisting department. The mills manufacture ducks, drills and osnaburgs, and have 28,080 ring spindles and 476 looms.

At a meeting of directors of Dunean Mill, Greenville, S. C., H. J. Haynesworth, well-known lawyer of that city, was elected president of the mill, succeeding J. Adger Smith, who resigned several weeks ago. B. C. Mathis, banker, of Newberry, S. C., was elected as vice president; R. E. Henry, of Utica, N. Y., but formerly with the Victor Monaghan plant at Greenville, was elected treasurer and general manager.

A proposition has been submitted by the majority stockholders of the Warren Manufacturing Company, of Warrenville, S. C., to sell the plant to the Graniteville Manufacturing Company, headed by Jacob Phinizy.

One of the direct results of the great y increased freight rate adpoted by the Federal Railroad Administration has been the incentive to cotton manufacturers in the South to investigate and purchase motor trucks for the transportation of the various commodities around the cotton mills. An example of this may be cited at the Massachusetts Mills in Georgia which are located at Lindale, about five miles from Rome. A great deal of the cotton for these mills is located in store houses in Rome, or is brought to Rome by the local planters. The local freight out of Rome to Lindale, despite the fact that Lindale is served by two railroads and an electric line, became so high on cotton and other products that the management has purchased three 5-ton heavy duty White motor trucks for this service and they are reported as doing very satisfactory work. These trucks make seven trips per day of ten hours

A REAR VIEW OF ONE OF THE MASSACHUSETTS MILLS' TRUCKS SHOWING BODY CONSTRUCTION FOR COTTON HAULAGE.

from Rome to Lindale, carrying in each load 14 bales of uncompressed or 22 bales of compressed cotton. Photographs of two of these trucks loaded with cotton are shown in the accompanying illustrations.

The Mulford (Ala.) Cotton Mills is putting down new maple floors and painting the inside of the mill white.

The Bearskin Cotton Mills of Monroe, N. C., the organization of which was previously reported in these columns expects to be ready to begin the manufacture of yarns by January 1919. This company took over a building already erected and had it fitted up and remodeled for cotton mill work. Thirty tenement houses are to be built in connection with this mill property. These will be of the modern bungalow type with water, lights, and sewage connections. A complete lighting system will also be installed in the village. The officers of the company are M. K. Lee, president; J. C. Sykes, vice president; E. C. Carpenter, secretary and treasurer.

The Mooresville Cotton Mill at Mooresville, N. C., was partially destroyed by fire on the night of November 4th. The picker room and cloth room suffered the most from the flames. All the machinery in the picker room was destroyed and considerable cloth was lost or damaged. The fire is believed to have started from a hot box.

Forty-eight additional looms and a number of new spindles are being added to the plant of the Huss Manufacturing Co. at Bessemer City, N. C. This mill manufactures fine damasks.

The Milstead Mfg. Co. at Milstead, Ga., are putting new concrete flooring in the warehouses at their plant.

One of the largest financial transactions in the Piedmont section of South Carolina was approved at a directors' meeting of the Grendel Mills when the sale by President A. F. McKissick, of his controlling interest in the mills to J. P. Abney, president of the Ninety-Six mill, and cashier of the Bank of Greenwood, was sanctioned by the board. The amount involved in the sale of the properties is one and a half million dollars.

Mr. Abney just a year ago acquired from Mr. McKissick control of the Ninety-Six Cotton mills, another million-dollar deal. Mr. Abney is about 32 years old and one of the leading financiers of that section.

The Savona Manufacturing Co., of Charlotte, will erect at once a modern village for the employees on the company's land near the plant west of the city. The plant now includes a bleachery, where towels are furnished for the market. The cottages will be supplied with deep well water piped to each kitchen and bath room. Superintendent John L. Davidson says the plans call for very attractive homes. R. R. Rankin of Mt. Holly has the building contract.

The former store building of the Clara Mills, Gastonia, N. C., is being remodeled for use as a community house for the Armstrong group of mills located in South Gastonia. When finished the building will afford reading, bathing, recreation and assembly privileges, besides being headquarters for community clubs and betterment associations. Everything possible will be done to make the work ideal for the people of this community.

New England Mill Situation.

The great change that has come about in New England cotton mill centers since the armistice was signed is an increasing supply of mill labor. Workers who have been engaged in other pursuits are now beginning to seek employment in textile factories. With this change comes the hope that before many weeks there will be very much less tension than has existed in that section for three or four years. The effect is going to be very far reaching as machine shops are certain to have plenty of work offered from home and foreign buyers, and there is likely to be a marked change in the demand for help capable of adopting new methods of finishing, packing and arranging goods for new markets.

New England manufacturers are hopeful that there will be a stronger effort in the future to cultivate foreign markets. This will entail a change of methods in operation and without a willingness to change manifested by the workers, it will be impossible to make much headway. During the war period New England mills have done more foreign shipping than ever before. It has not always been done by them direct, but large printers and finishers have done a great deal toward filling orders secured through New York houses.

At the moment a wage question is uppermost at Fall River. Its settlement is likely to indicate very clearly what the wage policy of New England mills is to be during the reconstruction period. There are some manufacturers who think it will be necessary to grant a further increase of 10 per cent. Others think that if some sort of a compromise can be arranged, so that current wages will be retained so long as food costs remain abnormally high, a better opportunity will be afforded to construct a basis of cost permitting the development and expansion of foreign trade. As Fall River goes, so will the whole section go, as there is a strong disposition among New England manufacturers to unite more closely than ever for wage actions in common.

The Government has begun to terminate many of its contracts and it is not yet very clear what the effect will be. For the time being manufacturers are sitting tight, offering no goods for future delivery, and trying as best they can to stem the tide of cancellations which set in with the talk of peace a month or so ago. Owing to the backward condition of many deliveries it has been impossible to avoid accepting some cancellations that have been demanded. There being no legal grounds to fight on, there remains only the moral standing of the buyer to question. That is a weak reed to lean on in many instances.

At Fall River it has been reported among manufacturers to report the circumstances of all cancellations to the local association thus giving every manufacturer information concerning the standing of buyers. As a consequence of this policy it will be very difficult for many buyers who do cancel to renew their old relations in that city. Similar action is reported as being taken among some of the selling agents in New York so that credit punishment is likely to be prolonged for those buyers who may always be trusted to buy freely on a rise and cancel freely on a decline.

Many of the mills in this section have been largely engaged in Government work and it will be some weeks be-

fore they can turn their machinery back to commercial lines. Some of the fine goods mills in New Bedford recently accepted large contracts for balloon cloths and gas mask fabrics that are no longer wanted in the quantities requisitioned. The general conditions that apply to the release of all Government contracts will apply to cotton goods and a questionnaire is now being distributed among mills in order to bring out information concerning the general standing of all Government contracts. There will still be considerable business offered from the Red Cross and other charitable agencies and contracts with them are not likely to be cancelled before completion.

The only forward business sought by mills thus far for the new fall season has been on shirtings. One of the largest lines has been opened. Salesmen have found little difficulty in securing as large orders as they could accept on these special lines but they report that the trade is not very keen as yet. The ending of the draft here and the disbandment of domestic armies is expected to change the character of the shirting demand in a very short time. The shirting trade suffered more from the war conditions than most other lines but a quick recovery is predicted.

In normal years at this time there would be offerings of 36-inch domets for the manufacturing trades. Selling agents nor cutters are ready yet to lay down orders. It seems probable that there will be a war demand for many of these goods through Red Cross and other agencies and as a good deal of this sort of merchandising has gone abroad in the form of garments it is expected that there will be an early revival in domestic demand when mills are ready to quote. The matter of price is so unsettled that neither buyers nor sellers will hazard a bid at the moment and it is the general expectation that it will be early in December before the leading lines are shown.

In some measure the same holds true of cotton blankets and lighter weight narrow napped cottons. The stocks of these in first hands were never so low and the manner in which the goods have been taken by jobbers this year shows that their stocks are clean. This should give promise of a good business when prices become satisfactory again, or at least reach the stage where a buyer may feel safe in laying down an advance order. Mills engaged on this sort of merchandise believe that they will have plenty of work by the time they are ready to accept it, In the meantime, orders on the looms for medical and Red Cross departments are likely to hold better than orders for some other goods.

The Government Price Fixing Board having extended current prices to the end of the year at maximum figures, there is a feeling in manufacturing circles that readjustment of values on a lower level will not proceed very fast this year. By the end of the year it is expected that all price fixing restrictions in the trade will be removed insofar as Government boards are concerned. Already, it has been decided that sellers may book contracts for as long periods as they like, the restrictions preventing the booking of gingham orders beyond April having been removed. This is taken to foreshadow a removal of all restrictions to December 31.

Prices have been declining on print cloths, yarns, sheetings and some other goods. Sales have been few from first hands but there has been considerable effort made to liquidate, in second hands. At times the New York markets have had offerings of from five to ten millions of yards in a day without takers. Buyers have not made up their minds as to what may be a safe basis of value from which to proceed to place future contracts. Sellers are also uncertain, at least to the extent of accepting lower prices at this time. Most manufacturers expect that market prices will decline but they will not be in any hurry to force them downward.

There is a very unsettled condition in the minds of manufacturers and agents concerning the future of credits. A war that has cost two hundred billions of dollars and brought the country into the position as a creditor nation with countries whose ability to pay promptly is at least questionable, leaves bankers in a state where they ask manufacturers how much of their own trade they are ready to finance. This is true more particularly of foreign trade. It is sure that taxes will be very high next year and that money rates for business purposes will be high for some time. These things cannot affect the long future trading to which manufacturers must look forward.

The yarn business of New England has been very large and very profitable during the war period. Whether it will continue so remains to be seen. It seems doubtful whether this section will be able to compete on coarse yarns with the South, although it has been doing so during the inflationary values of the past several months. Yarn merchants have favored many New England mills, and the changing policy of using yarn brokers in New York has resulted in the placing of good yarn orders with mills that could be engaged in normal times on yarns for their own weaving.

The outlook for cotton machinery companies is growing brighter each week. Since the armistice was signed all the leading machinery concerns have begun to acquire waiting lists of machinists and other laborers in the shops. This is the first time this has occurred in three or four years. Cotton machinery concerns will soon have plenty of labor and will be able shortly to climb down from the dizzy wage heights reached in competition with ammunition and ordnance factories. There is no dearth of opportunities for business.

During the war several of the machine shops have been working on foreign orders. The English shops will not be able to handle all the business that will be offered. Japan has bought cotton machinery here in a large way and some South American countries have also bought complete mill equipments. Japan will probably go back to the English shops, but there is every reason to look forward to a large influx of foreign business from other countries and indeed, the forerunners of this business are already in hand. Domestic mills have run their machinery to the fullest possible limit and the repair work alone in this country will give plenty of work to the old established concerns. The readjustment having begun with labor seeking work, the outlook is certainly very promising.

The War Industries Manchester Cotton Association, representing merchants and spinners controlling 22,000,000 spindles, state formally that the association is strongly of opinion that higher density cotton bales are desirable and at same time emphasize the importance of Government bringing to notice of ginneries that "cotton shall not be pressed in damp condition in order to prevent it being caked or felled."

Cotton Comment.

BY H. AND B. BEER.

New Orleans, November 21st, 1918.

Results of the bearish propaganda, predicting lower prices for cotton with the coming of peace, founded on no good reason except that most other commodities were to decline with the ending of hostilities, the market, following the signing of the armistice was thrown into a state of demoralization, necessitating the government to prohibit selling except to liquidate long contracts and to hedge spot cotton and hedge stocks of yarn and cloth.

Southern spot holders, however, refused to sell freely at the decline. In fact very little spot cotton was sold on the break, as farmers and merchants have confidence in higher prices eventually because of the small supply of cotton goods and raw cotton abroad.

The trouble with the market is that it has been deprived of the necessary tonnage to move cotton in volume to Europe, causing stocks in the South to accumulate.

The embargo on exports to Europe during the war was made necessary to prevent the staple finding its way into enemy countries, particularly Germany. Now that hostilities are at an end, less apprehension is entertained owing to the Allies being in possession of enemy frontiers, and the armistice has been so drastic as to make the enemy powerless to resume the war even if they were disposed to do so.

In the meantime efforts are being made by Southern interests in Washington to have all restrictions on exports, especially to friendly countries and neutral nations, removed, as well as to rescind the prevailing order governing trading. When this is accomplished the market will likely take care of itself, as there is said to be enough tonnage available now to move a large quantity of cotton to foreign countries, and an increase in the amount of tonnage is indicated for the future.

Except for the present bann on speculative short selling (as when a large short interest exists the healthier it is for the market), and the restrictions on shipping, the fundamental features of the market are strong.

Stocks in the South are large it is true, but comparatively they are much smaller abroad. At the close of July last, European mills held a stock of all kinds of only 350,000 bales vs. 3,175,000 in 1914, prior to the war.

By reason of the war having caused consumption of American cotton in Europe to decrease to the extent that only 4,828,000 bales were consumed in Europe last season compared with 8,907,000 bales in season of 1913-14, or prior to the war, it follows that it is likely that stocks of the manufactured product have been reduced to about the same extent. Therefore evidence is not wanting to prove that all countries of Europe are virtually bare of cotton goods and raw cotton, especially since exports thus far this season, or since August 1st, last, show a falling off compared with corresponding time last year of nearly 500,000 bales, to be exact 463,000, total shipments to date figuring 1,152,000 bales vs. 1,615,000 bales to even date last year.

Under the circumstances it is probably only a question of a short while when foreign spinners are large buyers of the staple in the South, as the cotton is urgently needed abroad. The necessary number of ships to carry the cotton to Europe will probably be provided soon or late, most likely earlier than generally expected, as there will be no longer the need of sending American troops to Europe, or for shipping ammunition and other supplies, except food, which will make more room for cotton. Furthermore new ships are being launched every day in increasing numbers throughout the world, especially in England and America, which, in time, will provide the necessary tonnage for the commerce which is bound to expand next year.

Large crop ideas are hard to reconcile with the small ginning returns to Nov. 14th, up to which date only 8,681,000 bales were ginned vs. 8,571,000 last year and 9,615,000 in 1916, linters not included. Last year's crop, except linters, was only 11,248,000 bales, in 1916 only 11,364,000.

Indications are for higher prices eventually, due to the return of peace in Europe.

Lancashire Notes.

BY AN ENGLISH CORRESPONDENT.

The spinners' strike, about which I wrote last month, lasted a week. The men asked that the Cotton Control Board pay them for time lost when working reduced hours by the board's order, and that the trade should revert to the rota system of employment. The latter demand, however, did not count for much, as the employment among spinners, even under the restricted production, is almost nil, and it has practically been dropped. The men were got back to work as the result of a suggestion of the Prime minister's that the matters in dispute should be referred to an impartial tribunal, a proposal which the men accepted. The whole difficulty was as to whom the trouble should be referred for settlement. The Control Board could not, of course, act as arbitrator as it was a party to the dispute and the Board of Trade was ruled out by the fact that it has already endorsed the policy of the Control Board. The tribunal which has been appointed consists of three men who have no connection with the trade—Sir Dudley Stewart-Smith, U. C., Chancellor of the Duchy of Lancaster, Sir A. Kaye Butterworth and Mr. George Rowe. It has held its first meeting.

The strike considerably accentuated the shortage of yarn which for some months past has been a great hindrance to manufacturers, some of whom have had to close their sheds as a result. A deputation from the Cotton Spinners and Manufacturers Association waited upon the Control Board and urged that something should be done to relieve the situation; and were successful in obtaining a concession. The Board decreed that, in order to make up the shortage due to the strike, all spinning firms might, on applying for the necessary license, work the number of spinners they were already licensed to work for 55½ hours per week instead of 45½ as under the preceding order. Mills so working have to pay the levy previously fixed for those running for 55½ hours. Accompanying this alteration was an order that manufacturers running looms on American yarn must reduce the percentage run from 65 to 60. Manufacturers who were licensed to run more than 65 per cent on account of the looms being engaged wholly or in part on Egyptian yarns or fine counts may continue to run the same number on fine work as hitherto

but must not run more. Of the remainder they may only run 60 per cent as against 64 per cent previously. The Board is not for the present considering any fresh application to run excess looms on fine counts or Egyptian yarns.

The trade is still laboring under a great shortage of raw material and there has been another deputation from the Control Board to the President of the Board of Trade. The Control Board has been rather let down by the government in this matter, inasmuch as the additional shipping which was promised a month or two back has not been forthcoming. Yet it was on the strength of the promise that the Control Board extended the working week of the American section from 40 to 45½. The president could not give any definite undertaking as to the future supply of tonnage, but nevertheless the deputation came away in a fairly hopeful mood. They had received a very sympathetic hearing and were convinced that the utmost that could be done would be done to maintain the cotton supply at least at its present level. If it is not there will be nothing for it but a further curtailment of production.

A mild sensaion has been caused by the transfer and amalgamation of four spinning concerns namely, Harwood & Son, Ltd., John Ashworth, Ltd., The Mill Hill Spinning Co., Ltd., and the Robert Hyde Buckley & Son, Ltd. (Mossley.) The new combination has very powerful financial backing which is not confined to Lancashire and the change was brought about by private negotiations. The spindles thus brought under one control number 667,300, divided as follows: Harwood's, 187,000; John Ashworth, 137,000; Mill Hill, 82,000; and R. H. Buckley, 261,300.

Four new members have been added to the Empire Cotton Clearing Committee in the persons of A. Canham, who has succeeded C. du P. Chiappini as Trade Commissioner in the United Kingdom for South Africa, and takes his place on this committee; N. N. Wadia, representing the Indian Cotton Users and Indian Merchants, respectively; and Frederick Hodgkinson, who was a member of the Indian Commission which has recently been investigating the position in India. A scheme for the expansion and development of the committee's work has been put forward in outline and fully discussed. It is proposed to set up a number of sub-committees to deal respectively with finance, commerce and development, research and education, and the collection and dissemination of information as to cotton growing. The main committee has agreed that in the formation of these sub-committees it is desirable that additional members should be added in order to secure the representation of the various interests concerned. Such members will be appointed by the president of the Board of Trade on the recommendation of the committee.

At the autumnal meetings of the Textile Institute strong appeals were made by the president (Sir Frank Warner) and Sir William Priestly, M. P., for financial support for the scheme for extending the work of the institute. For this object it is hoped to raise at least £50,000, but so far the response has not been so liberal as was hoped would be the case. Supporting the leaders of the institute in their appeal, the "Textile Mercury" says:

"For textile production, in quantity and quality, the area of thirty or forty miles around Manchester is incomparable in the world. An elaborate building, representative of the various textile activities, erected in the center of this busy wealth-creating area would not only be a monument to its worth and enterprise, but a most valuable institution for the promotion of the art and science of the manufacturer of fabrics. We have done very well without such temples in the past, but there comes a time in the history of the staple trade when international progress on our line compels us to think of further effort if we are to keep in front of advancing rivals. Have we not now reached this time? We must develop a higher respect for technology and lectureships, encourage invention and discovery, and cultivate a sounder business and scientific mind. All this is essential, because we shall have to increase and economize production in days to come to meet the higher costs in raw material and wages; the textile trades in particular will have to maintain their position in foreign markets against the multiplying efforts of other countries. Numerous suggestions could be made for the usefulness of a central textile institute conducted on a liberal scale."

The Operative Spinners' Amalgamation has passed a resolution in favor of a 40-hours week with such an increase in piece rates as will enable spinners to earn the same wages as during the 55½ hours which at present constitute the normal working week.

"Superior" Floors for the Mill.

Efficiency is the watchword of the mills today. This is an absolute necessity, not because of present conditions, but because of the conditions that will apply to all the plants during the period of reconstruction after peace is declared. After this event the American textile manufacturers are going to be compelled to meet the competition of the entire world, not only in the foreign markets, but in their home market. Therefore, the live mill manager in his search for the best wearing and therefore the most economical material for the construction or upkeep of his plant will at once be interested in "Superior" brand maple flooring, cut from the best Michigan timber, thoroughly dried and milled by the most modern automatic machinery. Such flooring, like our armies in the field, is a consistent winner. It is manufactured by the Nashville Hardwood Flooring Co., of Chicago, Ill., who advise that they have large stocks always on hand, guaranteeing prompt delivery in all standard widths and thicknesses and that every foot they make is guaranteed. This company has recently issued a striking folder descriptive of the "Superior" brand maple flooring which may be secured without cost upon request.

In these days of comparative fuel scarcity, one of the economic problems facing the manufacturer is the securing of more complete combustion and more perfect furnace efficiency with any fuel he may be able to purchase, since the time has passed when he can choose among the variety of grades which the country offers. A treatise on this important subject is embodied in the 52-page booklet just being distributed by the Coppus Engineering & Equipment Co., of Worcester, Mass., which describes the Coppus "Turbo" blower for under grate draft and other industrial purposes. The booklet is carefully written and well illustrated and should be at the hands of exery textile mill superintendent. A copy may be secured upon request.

COTTON MANUFACTURING.

Yarn Mill Organization and Efficiency.

BY S. A. FORD.

PRINCIPLES OF EFFICIENCY..

Much has been written in regard to the principles of efficiency. There are quite a few combinations of principles chief among which probably are Harrington Emerson's "Twelve Principles of Efficiency." For the ordinary man however with more or less limited time and no way of taking advantage of a special course of training in the many combination of principles, the following list of four principles will serve as an excellent basis to work upon. Let me once again state that these four principles are not original with me, but are simply what remained in my sieve after I had sifted all of the principles I could find and eliminated those I thought I could forget. They are as follows:

1. Standard.
2. Instruction.
3. Measure.
4. Reward.

Before undertaking a discussion of these principles individually I will consider them together as one single unit. Briefly, in practice, these principles mean about this:

A standard is first established by which men shall work. This standard governs the amount of work done and the manner in which it shall be done. It is determined upon after exhaustive trials and tests. This standard and ways of working to it may be entirely different than have been used previously and it becomes necesary to instruct men how to work to the standard. After a course of instructions about the new methods, materials, tools, or appliances the work an operative turns out is measured to see whether or not he comes up to the standard, and he is then rewarded accordingly.

I might add two more items, namely—common sense and the square deal, but as all efficiency is born of common sense, and the square deal is the food upon which it thrives, they are not principles but efficiency itself.

Consider now these four principles individually, remembering in a way all four of them and their relation to each other while discussing each principle.

STANDARD.

What is a standard? A standard is to efficiency what the quart measure is to the milkman. A standard is the measure of the amount of work done by a workman as the quart is the measure of the amount of milk the cow gives. This may be rather a homely definition, but I aim to discard the use of all technical terms so far as possible.

In this third article of his series on yarn mill efficiency, Mr. Ford takes up the question of standards. He writes in the language of the cotton mill. His examples are actual experiences. Moreover, as he is the operating head of a successful mill at the present time, his comments on the present wage situation, brought on by war conditions, are very opportune. They will be appreciated by the practical mill man who is operating under similar difficulties. These readers will also be interested in his suggestions. We shall be glad to receive the experiences of other mill men with this wage question. All accepted letters are paid for.—Editor.

To get a little deeper, a standard might be defined as follows:

A standard is a certain amount of work of a certain nature which has been established by thorough investigation and practical demonstration as a fair and square day's work. There can be but one *best* way to do anything, there can be but one *easiest* way, and there can be but one *quickest* way. As this is true, then it also follows that there is only one way that will possess all three characteristics and be the best, the easiest, and the quickest. This way should be the standard method.

Now this is rather a ticklish proposition. Any man hates to admit a thing might have been done better. It is human nature. Most men resent being told what shall be their day's work and feel that they are doing all that they could do. The average workman refuses to "loosen up" and do a good day's work just on general principles. He does not want to form any precedents that he stands a chance of being reminded of later on. The attitude of the average workman is to do as little as possible when the boss isn't looking and speed up when he comes around.

Every workman expects so much for his day's work, or, rather, put it this way; every workman expects so much for his time. Most workmen sell their time not their labor. If he works by the piece, he expects so much for his day's time and expects the unit piece to be such as to give him what he expects. If he works by the hour he expects so much a day and expects his rate to be high enough to give him what he wants. Therefore we can say that there is a certain standard to a workman's wages. Why, man after man sets a price of so much upon his time and refuses to go to work for any less. He standardizes his wages in other words.

There are always two sides to every transaction. If it is right for a man to standardize his wages, and no one denies him that right, then it is right for an employer to standardize the days work he gets from that man. If the workman says that he will not tend cards for less than $3.00 per day, then the employer is just as much within his rights to say that the man shall run so many cards and all other things being equal, shall produce so many cans of card sliver.

This may sound like a "dog eat dog" attitude but it must not be taken in that spirit. If the workman chooses to eat dog that is no reason why the employer should do so. In a large number of cases I am inclined to believe that trouble in a factory can usually be placed at the door of the employer or his agent. And in other cases, where

trouble is apparently due to the workmen, if sifted to the bottom the trouble can usually be traced back to the employer through some greivance of long standing.

But how are we going to determine upon what shall be the standard?

Workmen cannot be standardized. They must be dealt with as individuals and every attempt by education, or by any other means, to standardize them is bound to meet with failure. But we can standardize a process and we can induce men to carry on that process by the standard method.

Most everybody has heard of the time study man. He is one man who is usually hated by all workmen. It seems almost instinct for men to resent having a watch held on them. All workment resent it, even the foreigner, just arrived. There are some men who will not hold a watch on another merely because of their personal ideas of right and wrong. Some workmen claim its use and the results it shows deprive them of the personal freedom which is theirs by right.

Time study, in itself, is a science. A trained time study man in approaching a problem which he wishes to time, will first divide that problem, operation or work into its minute individual parts after repeated observations. He will next time each individual part of the operation by means of a stop watch registering to the one tenth part of a second. He will next add all the individual times together and the total will show the time it took to complete the operation.

The time study man will next study each individual part of the operation to determine whether or not it is a necessary part of the operation and if he decides that it isn't, then it is stricken out together with its time, and the necessary parts are then added together to get the time it should have taken added together provided the operative had not made the unnecessary motions. Then the time study man says that it actually took so many minutes to do the job, but it could have been done in so much less time provided the workman had not done this unnecessary work.

After repeated time study of this character he says the operation should be done in so many minutes and that so much work per day is a standard day's work. Now a man may be able to perform a certain amount of work at a certain speed at any number of individual times, but to keep it up for a day is another matter. Therefore the trained time study man must make allowances for a gradual let-up of a certain amount or counteract that let-up by rest periods which the workman must take.

This in a general way is what is called a "fine" time study. As a byproduct of such work as this, have come many inventions of great value. Probably the most widely known is that of high speed steel. Often by rearranging materials or work benches, or even changing the process itself the time study man has been enabled to make large savings.

I am not a trained time study man and due to the great respect I have for such a man, I do not even call my coarse time studies by that name but simply as observations. They are in reality crude and coarse time studies however.

Let me illustrate. At one time there were 40 fly frames from which I expected to receive a certain production. I was not able to get it, however, and after making sure my figures were correct I started out to look around. I talked in a general way with the second hand and help and came away with the idea that if we could get a new supply of bobbins it would help out a lot. So I put in an order for bobbins. This was returned to me with a little note attached to the effect, that if we would keep our boxes clean and stop the help from breaking up the bobbins, there would be enough to run the plant.

Clean boxes and economical help are most certainly desirable but they could not help us any at that time. It gradually went from bad to worse and got so that speeder tenders were running into the spinning rooms to get bobbins as they were being taken out of the creels. Two or more speeder tenders would meet over 50 or 60 bobbins and hold an argument, as only speeder tenders can, as to who the bobbins belonged to. These arguments were good for 10 or 15 minutes at the least. It also got so that speeder tenders would take bobbins to the first intermediate tenders in exchange for a box of back roving.

I then determined upon a course that was sort of revolutionary at that particular mill. I decided to show up, in a way that was truthful and honest, the actual conditions that existed in that room. And I don't believe I ever came so near to losing my job, and still keep it, as I did that time.

A young man working in the mill during the summer was placed in the room and instructed to record on paper the actual happenings on just one pair of fly frames. He was told not to let that speeder tender out of his sight for one minute and to record the conditions as they actually happened. He was to record the time the frame started and stopped each time, and what it was stopped for. If the speeder tender left her work for any reason he was to follow her and to record the time she left and returned, where she went and what she went for.

It took about a week for that young fellow to get acquainted and for the speeder tenders to get tired of playing jokes on him. He also began to realize the meaning of his work and got interested. The first week's observations were stopped for four hours each day for one cause or they were valuable because they were the direct cause of breaking up a practice of stealing hanks by turning the hank clock.

The second week we began to get evidence that could not be denied. This showed that our fly frames were only running from 50 to 75 per cent of the time. The third week the average efficiency of four pairs of frames was only 60 per cent. This means that these eight frames were stopped for four hour each day for one cause or another. The reasons for stoppages showed that 75 per cents of the stops were due to a shortage of bobbins. This was what I was after. It was a pretty poor record for an overseer to have in black and white and hand to his superior but it went just the same. And then the balloon went up, but we got the bobbins and I didn't lose my job.

All this, of course, was preceded by talks to the speeder tenders. I told them that I could help them, but I must be allowed to do it in my own way and if that way seemed new to them, why they must remember it was just my way and not to start to knock and lay down but to wait and judge according to the results. We had a little trouble, of course, but you can always find one or two who are willing

to try anything once, and then I helped out these special ones with a little extra in the envelope. That always helps to smooth out the wrinkles.

Things began to pick up in this room. Girls began to get off more work. They were better satisfied and felt that I was taking an interest in their work.

These frames made 4.50 hank roving, 8 x 3½, with a spindle speed of 1250 r. p. m. This spindle speed bothered me a little. I thought it was rather high. This was something that the management always regulated and I found it rather hard to persuade them to let me experiment, but finally I got permission and gradually reduced the spindle speed from 1250 r. p. m. to 1100 r. p. m. by drops of 25 r. p. m. or as near that as possible. As the speed dropped the production increased until we reached 1100 r. p, m. At this speed the production dropped slightly so we went back to 1125 r. p. m. and made this the standard spindle speed. At this speed the frames showed by actual test that they would produce more pounds than at any other.

A rather laughable incident that shows the superstition of some mill help happened at this time.

During these speed experiments, when the production went up as the speed was reduced, the third hand in the room, a Frenchman, really became frightened and I think that he must have thought that I possessed some uncanny power, for try as I might, I could not convince him it was just a question of finding the best speed and not any power I had of doing what seemed to him impossible. As I remember it he talked something like this:—"Mr. Boss, something I never see before. Speed 'em down and push 'em out quicker. How do you do that Mr. Boss?" But this feeling he had, that it was personal power stood me in good stead for he talked about this among the help and also told of our other changes and how much better the room was running. As a result when I wanted to try out things in other rooms I did not have any trouble in getting a start.

Up to this time I had not tried to work up a higher efficiency on the part of the help. Every change made had been a mechanical change. We began to have trouble with the back roving not coming through fast enough and quality was not as good as I wanted it to be. I next gave the speeder tenders plenty of back roving and started a systematic scouring and cleaning schedule.

I then talked to the speeder tenders about as follows:

"I am not satisfied yet with the quality of the work we are getting. There was a whole lot the matter with the frames, but we have fixed them up and now we are getting a fair production, but there are a lot of things that you girls are not doing that you should do. You should pick your flyers before each doff. You should lay your roving in the doffing boxes. You should pick your clearers more regularly. You should keep your top and bottom rollers cleaner. You are making bad piecings when creeling in and piecing up ends. Now you have been helped by others, are you willing to be a little more particular in your work and help yourselves?"

I had their cooperation right away. We worked up a schedule covering every item regarding the care of the fly frames, and then taught the girls how to follow out the instructions. It worked like a charm. Quality and production both grew better. I then pronounced the sky the limit and no cut downs for high productions. The girls themselves established a standard of 42 hanks per week per spindle, and any girl who went to work in that room had to at least equal that standard and many of them did better.

Let me relate another incident of an experience I had in a finishing room on a cone winder. Time studies were made of cone winding and showed certain results. The girls on this work were rather antagonistic to the efficiency idea. One girl was picked out of the crowd for her general appearance, personality and ability, all of which were good. This girl was approached with an offer of 50 per cent increase in wages provided she would be willing to conscientiously and truthfully follow the instructions she would be given. She was told just what we would try to do and what we expected to find out by the experiment. We told her that we were not sure that the spindle speed was all right and did not know whether the grils were running too many or too few spindles. That was something we wanted to find out by experiment. She was told that we would not work her any harder than she had been working and that we would not humiliate her in any way. She agreed to the proposition, but stalled after a few days and finally quit. A man was sent to her home to interview her as to her reasons for quitting and she finally admitted that it was on account of the attitude of the girls in the room. A few days later this girl was induced to return and go back to her old work. Later she became our best operative under the new methods and earned the highest bonus ever paid on this work at that plant.

This spirit of antagonism we could not successfully combat so it was decided to hire a green hand and break her in under the new methods. It took a little more time, but we were able to keep this girl. The results of the experiments showed we could increase our spindle speed 10 per cent. The number of spindles per operative was reduced from 18 to 12. Other changes in the handling of the work gave us an increase in production of 18 per cent. We took advantage of this by using some of the help which were formerly winder tenders as inspectors and stopped the spindles we could not run.

After the girls had worked under the new system for awhile and really found out what we were trying to do and that no one was going to get hurt nor asked to do the impossible, and, last but not least, have a chance to make more pay, we had no more trouble. These girls could not be made to go back to the old system.

Shortly afterward when we came to standardize the work on the spoolers, a report of our experiences on the cone winders had preceded us and, as all the spooler tenders were more than willing to try anything, we had no trouble.

Two more incidents showing developments and improvements as the result of time study in the cloth room of a mill making flannels and blankets. Blankets are woven and napped in a continuous length and are then cut between the headings into single or double lengths as the case may be. Six men were necessary to cut these blankets by hand with hand shears. But by the use of a special table and perch and an electric cutter this work was done by two men.

In the same room flannel was wound into bolts with a board for a core. The bolt was taken from the winder and

piled on a table. A man with a truck next came along and picked up these bolts and took them to another end of the room where they were sorted and checked off and then cased up. The installation of a conveyor did away with the man and the truck and landed the bolts right at the sorting floor direct from the winders. At first this conveyor was simply two endless leather belts placed near the edges of the table and driven at a slow speed by a small electric motor. Only cloth placed on the table would be carried along by these two belts. Later a gravity conveyor was installed to take the place of this table.

Now I have said that the standard way must be the easiest, quickest and best way. The best way is, in most cases, always assumed to be the quickest way. The operatives often say, that the best way, as far as the employer is concerned, is the quickest way or the way the employer can get the most work for nothing. But under the modern efficient way of doing things this is not literally so. Speed is not everything, although it is a big thing; for all other things being equal the easiest way should be the quickest way for ease is conducive to speed. This being so then the first thing to look for in establishing a standard is to find the easiest way and not to find the quickest wa Search for ways to make the work as easy as possible. If anything can be done to make the work easier, it should be done, unless it be impossible for other reasons.

It always happens that, in studying an operative, we find that in performing a certain operation continuously, there will often be a marked difference in the comparative time of the individual operations. Now it is not fair to rate a man on any single operation. It is not fair to rate him on a fast or a slow operation. It is not fair to rate him on time studies made during any particular period of the day. I mean by this that it is not fair to rate a man on time studies made during the forenoon because they are liable to show better than those made during the afternoon. *Men must be rated on their average performances.* And if we are going to set a standard for a large number of men, then we must consider the Toms, Dicks and Harrys. They are not all Toms. Some may be more efficient than Tom; others may not; and it is not fair to rate either of the others by Tom's performance without considering them individually. Some operatives are able to excel and by using these as instructors they are able to increase the efficiency of those they try to teach. But in 95 per cent of the cases those taught are never able to equal the efficiency of the instructor. It just seems natural for some operatives to excel.

There are lots of employers who do not believe in setting standard tasks. One of the reasons for this is that it wears out the operative. This wearing out is due to fatigue caused by the nervous energy or desire to reach or even excel the standard task. Fatigue curves show that an operative will reach his maximum efficiency soon after starting to work in the morning. This will continue for a while and as noon approaches his efficiency will gradually drop. After dinner his efficiency curve will rise slightly and then start to decline until at closing time the average operative, due to fatigue has reached his point of lowest efficiency.

Efficient methods of manufacture take notice of this fatigue and provide means to overcome it. The antidote for fatigue is rest and so efficient management says that operatives influenced in their work by fatigue, so that it reduces their efficiency, shall rest and these rest periods are of certain length and come at certain stated times during the day. In some cases these rest periods will amount to as much as 25 per cent of the total time worked, although it is usually less. And as these rest periods are all a part of the day's work and the operative takes them at the direction of the employer, some method must be devised whereby the operative does not lose any pay.

The cost of any article may be considered as the product of time and wages plus indirect expense, plus cost of materials. The cost of materials we will leave out. With wages and indirect expense fairly constant or rising, the only way to reduce cost is to reduce the time per unit. Modern ways of doing this are by reducing the amount of energy required to produce a unit of product. To get double the product, instead of doubling the speed of the worker and making him work twice as hard, we try to make his work twice as easy and thereby allow him to get twice as much with the same amount of expended energy.

This is the province of the time study man and is his constant aim. To bring it about he may want to change the way a man works, rearrange his working tools or the machines he operates, or he may devise some new machine for taking from the man some of the hand labor. When such new equipment is installed it means the expenditure of money. This means a greater investment for the manufacturer and he is entitled to a proportionate return for his larger investment. If it benefits the manufacturer by a greater return then it should benefit the employee as a reward for his increased efficiency.

Today we are passing through an abnormal experience. War conditions have tended to inflate wages beyond all reason. Workmen have become very selfish in their demands. The men who have control, more or less, of these matters have seemed, up to the present time, to believe that higher wages will solve the problems brought about by war conditions. But I speak of my own experience (we have tried to follow the labor market as a matter of self preservation), when I say that the constant increase in wages has done more to disorganize our force of employees than any other factor. Not because other plants, on more essential work than ours, can take our help away from us, but I speak of internal plant conditions that we have with us constantly.

There is one way to meet these conditions and only one way, and that is *production* and *more production*. High wages are bound to follow high production under efficient management. Therefore get production and the wages will take care of themselves. High wages are all right and very desirable, but if not accompanied by high production they are not equitable and therefore are bound to cause an unbalanced condition and react in ways that are not looked for. Not every increase in wages can be followed by increases in production, for we should always be at maximum production, but higher wages should tend to make operatives keep to the high production rather than to let production drop.

Dyeing, Bleaching and Finishing.

Corn Starch in the Textile Industry.†

BY W. R. CATHCART.*

The textile manufacturer, be it said to his credit, is rapidly getting away from traditions and mere opinions and is more and more conducting his work along scientific lines. He knows that exactness must supersede chance and reason supplant "rule of thumb."

Years of experience in any line of industry is always valuable, but it is fortunate that such experience sometimes results in forming opinions which are largely personal and frequently close the mind to progress and improvement. When corn starch was first introduced to the textile industry "pearl" starch was offered and many textile manufacturers still think of corn starch only in this form. "Pearl" starch is really the crudest form of corn starch which is commercially possible, and has been pertinently termed the "pig iron of the starch industry." Many attempts to replace potato and other starches with corn starch proved unsatisfactory, because only the "pearl" or crude starch was used.

Some time ago there appeared a pamphlet, entitled "The Use of Starch in the Textile Industry, With Special Reference to Potato Starch for 'Sizing' and 'Finishing'" by C. C. Moore, which was distributed among cotton manufacturers and the textile industry generally. The justification for referring to this publication at this late date is to be found in the fact that those interested in textiles are giving more exact attention to that department of their work in which starch is of first importance and further, because, as far as is known to the author, the article referred to has never been subjected to a critical analysis. This pamphlet is highly interesting and should be read by all users of textile starches. Many of the statements therein are important, and the conclusions drawn would be important also if they were logical in accordance with facts based upon actual experience of manufacture.

This monograph contains the following paragraph:

> The art of weaving has been developed to a high degree of perfection in European countries, and as the general commercial starch of those countries is potato starch, this starch was used in the sizing of yarns. Upon the development of a corn starch industry in the United States, together with the development of an American textile industry, the manufacturers began to introduce the use of corn starch into the textile mills as a substitute for potato starch.

The use of potato starch in the textile industry preceded that of corn starch because the manufacture of potato starch antedates that of corn starch. The use of potato starch is more general in European countries because the raw material from which corn starch is made, namely, Maize, or Indian Corn, is grown there in comparatively insignificant quantities, while potatoes are produced cheaply and in abundance, which means the supply of potato starch is certain in these countries, and not because potato starch is the only starch which can be used to obtain the desired results.

On the other hand, in this country we are in the more fortunate position of possessing a supply of both raw materials, namely, corn and potatoes. Potato starch was first used because it was manufactured before the textile corn starches, and because of the previous experience with this product in European countries where the textile industry was developed before coming to the United States.

As the manufacture of corn starch developed, its adaptability to the textile industry was recognized. Progressive men tested out this starch for their purposes and, with their cooperation, the corn starch manufacturers have been able to develop starches of higher and higher purity, with a wide range of physical properties, covering many degrees of viscosity or fluidity, with uniform quality, and properties controlled with exactness to meet the varied requirements of the textile industry.

It is not claimed that potato starch and corn starch are the same, in fact, they differ in many respects. From the standpoint of the chemist, all the starches, whether they come from corn, potatoes, or rice are identical—that is, they have the same chemical formula and are susceptible to the same chemical reactions and changes. On the other hand, they differ in appearance when examined under the microscope, in their feel when rubbed between the fingers and in the kind of pastes produced when boiled with water. In other words, the differences are essentially physical, due to the differences of the starch granules and small amounts of non-starchy materials which they contain and not to the essential substance regarded as a chemical individual.

It may be quite true that because of its physical properties potato starch is in some few cases better adapted to certain industrial purposes than any other form of starch, just as the same may be said of starch from other sources, but the number of such cases is limited and by no means plays an all important part in the textile industry.

The reference to corn starch "as a substitute for potato starch" is misleading. It implants a false idea—a substitute is regarded as possessing qualifications of a lower grade than those of the person or thing substituted for, a factor to be used only when the better or more desirable is difficult to obtain or inaccessible. A fairer or truer form of expression is "replace." Textile manufacturers have replaced and are replacing potato starch with corn starch, because, all things considered, it is advantageous to do so. As already stated, the manufacture of potato starch preceded that of corn starch, for potato starch was the better known and more accessible and, therefore, first used in the textile industry. It took a certain amount of courage and enterprise to change from potato starch to corn starch, but the number of textile manufacturers doing so is constantly increasing, while practically none resume the use of potato starch after a fair and intelligent trial of the modern refined and modified corn starches.

THE VISCOSITY OF STARCHES.

When speaking of starch pastes, the terms Viscosity and Fluidity are both used. A high viscosity means a low fluidity and vice versa. Since the introduction of the highly refined modified corn starches, the so-called "thin-boiling" starches have occupied a position of ever increas-

†Read before the National Association of Cotton Manufacturers.
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ing prominence, because of their special value to the textile industry, notably for the sizing of warps. Because of this importance, it has become necessary to standardize these different varieties with the greatest care so that when a textile manufacturer has determined the exact requiremens of his work he may order and always be sure of getting exactly what he needs. Experience has taught that this standardization can be made and expressed more accurately in terms of fluidity than in terms of viscosity. For this reason the refined modified thin-boiling starches are usually described in terms of fluidity rather than in terms of viscosity. Attention should also be called to the fact that any given values for fluidity or viscosity are always relative and never absolute. Comparative tests must be made with the same individual instrument and under absolutely the same conditions as to temperature, time and concentration. Quoting again, we find the following:

> Assuming the three starches to be in a normal condition, the viscosity of potato starch is from four to five times that of corn starch, and from two to three times that of cassava starch. This means that in the making of a paste from these starches there would be required from four to five pounds of a normal corn starch to a definite volume of water to make a paste of the same consistency as would be obtained by the use of one pound of potato starch in the same volume of water. It must, of course, be understood that the conditions under which these two pastes are made are such as to produce the maximum pasting effect for the starch in question. If potato starch paste is to be made, the thickest paste is made by bringing to boiling and continuing the boiling for five minutes. If the boiling be carried further than this, the paste becomes thinner, until at the end of thirty minutes it is but one-third the thickness that it was at the end of five minutes.

The fact is that according to G. M. MacNider, "Journal of Industrial Engineering Chemistry" Volume 4, Number 6, June, 1912—the viscosity of potato starch after five minutes boiling is 19.51 and at the end of thirty minutes only 6.33, while corn starch at the end of thirty minutes boiling is 7.0. Assuming that 7 is the highest viscosity for corn and allowing 19.51 for potato the ratio is approximately three to one in favor of potato, however, if we take the figures corresponding more nearly to conditions of actual practice, namely, boiling thirty minutes, we have for potato 6.33 and corn 7.0.

The reference to *normal* potato starch and normal corn starch is very significant. What is a normal potato starch? The users of potato starch well know that it is a very variable product depending upon its source and what is regarded as normal in one instance will not apply to all cases. In regard to corn starch the designation is still more meaningless. As a result of the progress and development in the manufacture of corn starch the textile industry may obtain thick-boiling starches having a high viscosity or thin-boiling starches having a low viscosity and these different varieties cover a wide range of fluidities. All that the textile manufacturer has to do when using corn starch is to determine which type is best suited to his requirements and then he may be sure of uniform quality and results. For example, suppose the textile man decides that for his kind of work a starch, which according to the standards of the starch manufacturers shows a fluidity of 20, is required, he can rest assured that as long as he desires that degree of fluidity he will always obtain just what he needs and that his mixture will remain constant while in use, even though continuous boiling is necessary. The statement that potato starch if boiled thirty minutes has only about one-third the thickness possessed after five minutes of boiling should be specially noted. Users of potato starch know that the longer the boiling of potato size is continued the thinner the paste becomes, so that it is common practice to thicken the mixture from time to time with fresh starch. This procedure, of course, produces an element of uncertainty which has a corresponding effect upon the results obtained. The statement "there would be required from four to five pounds of normal corn starch in a definite volume of water to make a paste of the same consistency as would be obtained by the use of one pound of potato starch in the same volume of water" is misleading. It might hold under certain conditions as shown by statements made in other portions of the pamphlet, but really has no bearing upon the needs of the textile manufacturer who knows his requirements.

A paragraph bearing the caption "An Improper Comparison of the Viscosity of Starches" contains some noteworthy statements such as the following:

> If similar quantities of corn and potato starches be boiled in the same quantity of water, the corn starch paste obtains its highest degree of thickness only after at least thirty minutes boiling; and at the highest degree of thickness of corn starch it will be then but one-third the thickness of a corresponding quantity of potato starch paste. If equal quantities of potato starch and corn starch be boiled in separate and equal quantities of water for thirty minutes, the resultant pastes are practically of the same degree of thickness. Of course, the inconsistency is very apparent, for why should a potato starch paste be compared with a corn starch paste when the potato starch paste has been reduced in viscosity by continuous boiling, whereas the corn starch paste has been increased in viscosity by the same time of boiling!"

In all fairness it must be perfectly apparent to an unprejudiced person that if comparisons of viscosity are important the tests should be made on the basis of the conditions most favorable for the respective starches. Certainly, the comparisons to be of value should conform to the conditions of actual use.

But apart from all theoretical considerations the point which interests the man who does the sizing is the condition of the mixture when it is applied to the fibre. It is well known that such mixtures are made in portions of 100 to 150 gallons or more and usually several hours elapse between the time of preparation and complete consumption. During this interval the mass must be kept hot either in the kettle or size-box by means of steam, almost universally by the injection of live steam. If the mass is not at the boiling point, a dilution occurs due to the condensation of the steam—this is not desirable—and if the mixture is kept boiling the potato starch size is changed since the mystic "five minutes" so persistently emphasized in the above quotation are disregarded and always exceeded. The statement "printed matter has been issued that showed positive jugglery of scientific facts" by corn starch manufacturers is surprising. The truth is, "jugglery" is entirely unnecessary on the part of the corn starch manufacturers. Two salient facts in reference to potato starch are brought out by the author of the paper which furnish the subject of this discussion.

First—Potato starch as put on the market is not uniform.

Second—A paste or size mixture from potato starch is very sensitive to the necessary boiling and handling in use and therefore suffers material change when used in manufacturing processes.

After all, the interest of the textile manufacturer in the viscosity or fluidity of the various starches is only secondary. Practically, none of them is equipped to make such determination with any degree of accuracy, and it is not necessary for them to be so equipped. Determinations of fluidity are especially the function of the starch manufacturer. The experience of the starch consumer based upon actual tests determines the form of starch best adapt-

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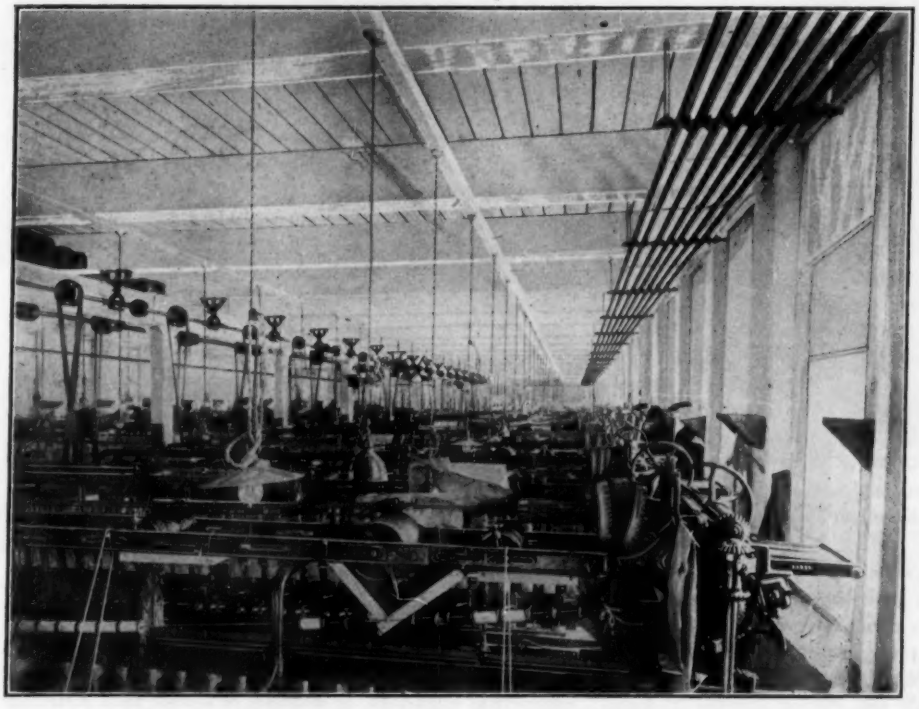

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ed to his work. Upon this basis it is the special work of the starch manufacturer to determine the peculiar properties of the starch beneficial to the consumer and adopt methods and standards designed to deliver a uniform and stable product. In this regard, a standardization of fluidity is of first importance. How this factor is expressed is of no special significance and is not considered a secret, but the accuracy of the result must be safeguarded by the most precise methods of manufacture. How well this has been done by the manufacturers of corn starch can be testified to by the large number of textile manufacturers, who for years have demanded and obtained just exactly the kind of corn starch they require and feel comfortable in the assurance that with uniformity in the mill they will always secure uniform results from the corn starch selected.

The paragraph entitled "Thin Boiling Starches for Sizing" contains statements generally correct, but so presented as to indicate that they should be taken with a certain amount of mental reservation. Experience has shown that thin boiling starches have a distinct advantage over ordinary thick boiling starches in the sizing of yarn. The ever increasing number of mills which are changing from potato starch to thin boiling brands is positive proof of this statement. There are, of course, cases where on account of very heavy weaving conditions the production shows practically no difference between a crude corn starch so called "pearl," potato starch and a thin boiling corn starch, but in a large majority of cases the difference is quite marked and in favor of thin boiling starch.

Yarn is sized for two reasons: first, to impart greater strength to the warp, for the purpose of increasing the weaving quality, thereby securing greater production from the looms, and second to add weight to the cloth. Every mill is interested in the first reason. Many, however, are interested in both effects. Now, let us see how a thin boiling starch applies to the case. The cotton fibres may be roughly described as long, thin, closed, hollow cylinders or prisms. Probably no one claims that the individual fibres are penetrated by size. However, when the fibres are twisted into a yarn or thread there are spaces or interstices between fiberes extending through the cross section and along the entire length. When such a yarn comes into contact with a liquid, owing to a capillary attraction the liquid is taken up and absorbed in the spaces between the fibres in the same way that a lampwick takes up oil or a blotting paper absorbs ink. The amount of rapidity of this absorption depends upon several factors, such as temperature, concentration, and in the case of yarn the twist, but more than anything else upon the fluidity of the liquid. The higher the fluidity the more rapid is the absorption or capillary action due to the spaces between the fibres, hence the greater the penetration into the interior of the yarn. When the size gets on the inside of the yarn and is then dried, the interior fibres are cemented together as well as the exterior fibres. This, of course, increases the strength of the yarn and "lays" the fibre, and shows correspondingly beneficial results in the weaving. Increased strength due to thin boiling starch as compared with the increased strength due to thick boiling starch has been quantitatively determined by methods as exact as it has been possible to devise and the difference in favor of the thin boiling starch was shown to be very marked.•

When sizing for weight, the difference is again in favor of the thin boiling starch as shown by similar quantitative tests on this subject.* The reason is perfectly plain. The thick boiling starch remains for the most part on the exterior of the yarn while the thin-boiling starch penetrates to the interior and is, therefore, more completely retained and does not shed off to the same extent on the leash rods of the slasher and on the looms as does the thick boiling starch, which is principally on the outside in the form of a coating. These statements are not to be taken as claims for any one particular kind or brand of starch, but are based upon the experience of textile manufacturers who have used both thin-boiling and thick-boiling starches, including potato starch, intelligently, and based their decisions not upon the opinions of this slasher-man or that weaver, but upon actual tabulated records.

In the case of corn starch, the change from a usual or normal form of starch to a thicker boiling starch or a thin-boiling starch is brought about by chemical treatment. This is usually termed "modifying" the starch and according to the conditions of time and temperature can be controlled to a nicety which is really surprising in its exactness. The placing of pure modified corn starches on the market has enabled the consumer to secure exactly the type which is best suited for his work. As pointed out, it is admitted that potato starch does not remain uniform, that the viscosity changes with boiling and is reduced as low as that of corn starch size. Is it likely that the man who boils his size, usually the lowest paid and often the least intelligent man in the slasher-room, can arrest this change at the proper point and having arrested it, maintain the viscosity at the proper degree for the best results? The element of chance is very great, the personal factor very prominent, as compared with the exactness with which modified corn starches are at present manufactured. To obtain uniform results the size-mixer must have a starch which does not change between the time when the mixture is finished and when it is applied to the warp. In other words, the starch must be "fool proof." Permit me to direct your attention especially to the following statement from the pamphlet:

> As is well known, the addition of any chemicals to a starch affects its physical properties, and it is consistent to assume that modified or thin boiling corn starches do not have the same adhesive value that normal corn starch would have. Since the adhesive value of the starch paste is of first importance, it would appear not desirable to use a starch whose physical properties are probably impaired. If a potato starch paste be prepared by continuous boiling and without the use of chemicals, thus resulting in a thin-boiling paste, the adhesive properties are not affected, and for this reason a thin-boiling potato starch paste, with its normal adhesiveness, would have very decided advantage over a thin-boiling corn starch paste that had received a previous chemical treatment. The corn starch manufacturers introduced thin-boiling starch into the textile industry, but its value for sizing cannot be understood by the writer.

Why is it necessary to use such words as "assume" and "probably" when it it can be definitely determined and measured whether the chemical treatment of corn starch has improved or impaired the desirable qualities? Does it seem at all reasonable that the corn starch manufacturers with their enormous investments, their highly specialized processes, their staffs of scientifically trained men, would persist in injuring and impairing the quality of their product, with the hope of hoodwinking the textile manufacturers? This might succeed once or twice, but the success could only be transitory and all the expensive investment for the production of these modified starches would be lost and the reputation of the corn starch manufacturers damaged beyond repair.

The true answer is found in the fact that in the face of all tradition, in spite of all prejudice, the use of corn starch for textile purposes, and especially the new purified and modified types, is constantly increasing, to the profit and satisfaction of the textile manufacturers, the inability of the author of the pamphlet to understand the value of thin-boiling corn starch to the contrary notwithstanding.

The high cost of potato starch clearly causes concern, as this point is discussed under a special heading, namely, "The Cost of the Starch Used Is of Trivial Importance." This headline is striking and the correctness of the statement depends very largely upon the attention which the management of a plant gives to the cost of production. The experience of most starch salesmen is that purchasing agents have the very commendable habit of paying rather close attention to the conditions of the starch market and invariably try to buy under the most favorable conditions. The effort is manifestly made to meet the situation that corn starch can be and is sold at a lower price than potato starch. The true explanation of this condition is perfectly apparent when the facts connected with the manufacture of potato starch are compared with those of corn starch.

In the first place, potatoes contain approximately 74 per cent water and 20 per cent starch, while corn shows approximately 12 per cent water and 54 per cent starch, so that corn starts off with the advantage of 170 per cent more starch than potato. Furthermore, corn contains in commercial quantities, in addition to starch, such materials as cellulose, oil and gluten, which are separated and recovered in the manufacture of corn starch. The cost of production does not, therefore, fall upon the starch alone, but is distributed over other valuable products. Corn starch is produced in very large, highly organized plants, (one plant grinding approximately 60,000 bushels of corn per day running the year round), which permits the most efficient application of both machinery and labor, secures a close, scientific supervision of processes, thereby insuring reliability and uniformity in the finished product. The resultant economies put the corn starch manufacturer at a distinct advantage and, therefore, corn starch can be sold profitably at a lower price than potato starch. On the other hand, the potato starch plants are relatively small, located so as to consume a surplus of low grade crop and operate only when the conditions of raw material are favorable. Such circumstances manifestly do not result in the economies and efficiency cited. The price of corn starch is regulated by the price of corn and controlled by the competition of the corn starch manufacturers.

The reports of the Department of Commerce, Census of Manufactures, for the starch industry for the years 1904, 1909, and 1914 give comparative figures, as follows:

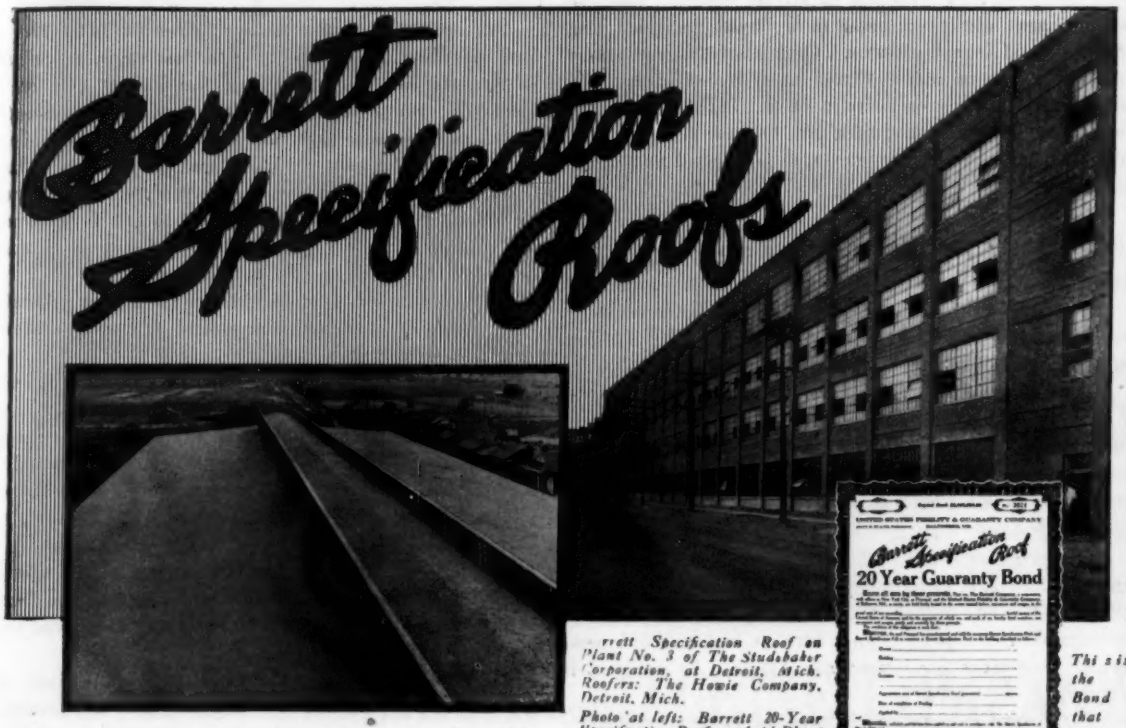
	Potato Starch	Corn Starch
1904.	27,709,400 lbs.	311,140,814 lbs.
1909.	24,873,415 lbs.	638,825,366 lbs.
1914.	23,540,472 lbs.	574,247,697 lbs.

The production figures compiled by the corn starch manufacturers for the succeeding years are available and show substantial increase in output.

Total production—	1915—	775,891,649 lbs.
" "	1916—	868,916,578 "
" "	1917—	833,131,755 "
(First Six Months).	1918—	481,761,893 "

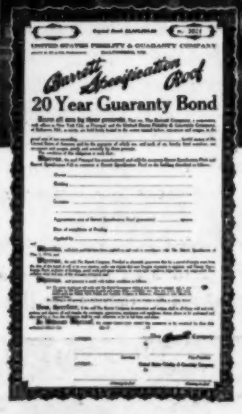
of which 75,954,263 pounds went to the domestic textile trade.

*"The Determination of Weight and Breaking Strength of Warp Yarn Due to Sizing." G. M. McNider, "Cotton," Atlanta, Ga., March, 1917.



rrett Specification Roof on Plant No. 3 of The Studebaker Corporation, at Detroit, Mich. Roofers: The Howie Company, Detroit, Mich.

Photo at left: Barrett 20-Year Specification Roof on Acid Plant of Swift & Company, Harvey, La. Roofers: Kracke & Flanders Company, New Orleans, La. General Contractors: Hugger Bros., Montgomery, Ala.


Barrett Specification Roof
20 Year Guaranty Bond

This is the Bond that guarantees your roof for 20 years

Cover Your Investment with a 20-Year Guaranty Bond—

Every one knows that a structure of brick and steel and concrete will endure for a generation and more.

But how about the roof that covers the structure?

Frequently that is not only an unknown quantity but a *liability* rather than an *asset.*

It is a short-sighted and costly policy to put a *poor* roof on a *good* building.

As one of the oldest and largest manufacturers of materials used in constructing roofs, we have done our part to make *all* roofs *good* roofs.

Years ago, for that reason, we induced the leading architects and engineers to unite in the adoption of The Barrett Specification as a satisfactory *standard specification.*

Now we go a step further by sending our Inspectors to check up on the construction, and if they find that The Barrett Specification has been properly complied with, we will, without charge, issue a 20-Year Guaranty Bond *exempting the owner from all further expense for repairs or up-keep on that roof for twenty years.*

This service may be had on all roofs of fifty squares or larger in all towns of 25,000 population or more and in smaller places *where our Inspection Service is available.*

Our guaranty is a real Surety Bond issued by the U. S. Fidelty & Guaranty Company of Baltimore, one of the largest Surety Companies in America.

Thus, in spite of the fact that we do not build roofs ourselves, we are put in a position where we can guarantee the delivery of the long years of service which these roofs are capable of giving.

A copy of The Barrett 20-Year Specification, with roofing diagrams, sent free on request.

The Barrett Company

New York Chicago Philadelphia Boston St. Louis Cleveland Cincinnati Pittsburgh Detroit New Orleans Birmingham Kansas City Minneapolis Salt Lake City Nashville Seattle Peoria Atlanta Duluth Milwaukee Bangor Washington Johnstown Lebanon Youngstown Toledo Columbus Richmond Latrobe Bethlehem Elizabeth Buffalo Baltimore

THE BARRETT COMPANY, Limited: Montreal Toronto Winnipeg Vancouver St. John, N. B. Halifax, N. S. Sydney, N. S.

It is true that the corn starch manufacturers use the lower price of their products to attract business, because the argument always appeals to a buyer, provided the article offered is not inferior. Corn starch, for the reasons given, can be manufactured more economically than potato and, therefore, is lower in price. Inferiority on the part of corn starch is not admitted, because it is not necessary to do so if the proper starch is selected and intelligently used.

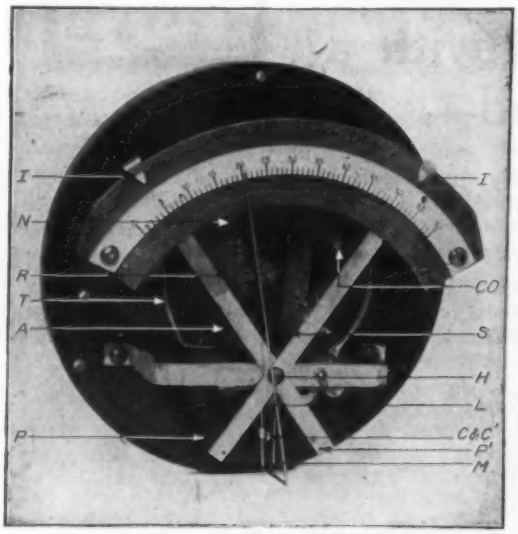
A New Pressure Governor.

In many power installations, where air, other gases or liquids must be maintained under pressure, the demand for an automatic method of doing this has arisen.

As a result the General Electric Company has developed a new pressure governor to control standard self-starters for motor operated pumps and compressors. The governor maintains a pressure between predetermined limits on any gas or liquid systems that will not corrode the Bourdon Tube.

This governor is called the CR 2922 and can be used on any standard A. C. or D. C. circuit. It is rated for pressures of 80, 100, 160, 300 or 500 pounds and operates within settings of from 3 to 12 pounds between high and low pressures. Governors for higher pressures can be supplied if desired.

The governor consists of a Bourdon Tube, an indicating needle, a graduated pressure scale, adjustable high and low pressure stops to determine the desired pressure range and



THE INTERNAL MECHANISM.

a relay which actuates the contacts in the control circuit of the self-starter, all enclosed within a dust proof case, easily opened for inspection.

Action of the governor is dependent on the Bourdon Tube which should be connected to an independent discharge pipe from the pressure tank. The free end of the tube "T" is mechanically connected to the indicator needle "N" moving it over the scale as changes of pressure affect the tube.

After the settings for the pressure range have been made, the governor will automatically maintain pressure within those limits.

The operation of the pressure governor is as follows: Assuming that the pressure is at the low value, as indicated by the left hand indicator (I), the contact (C) on the needle (N) completes the circuit through the contact (C^1) on the movable arm (M), which at the low pressure point rests against the stop (P^1). When this contact is made, the circuit is completed through the relay coil (R), causing the armature (A) to close. Attached to this is the contact (CO) which upon closing completes the control circuit to the self-starter, causing the motor to start.

The armature is also attached to the spring (S) which holds the contact (C^1) firmly against (C) until contact is broken at (P).

As the pressure increases, the needle pointer moves to the right, but its lower part to which the contact (C) is attached moves to the left, and is followed by the movable arm (M). When the high pressure point is reached, the movable arm is prevented from travelling further by stop (P) and the needle continues its course breaking the circuit by separating the contacts (C and C^1). The instant the circuit is broken, the relay (R) is de-energized, its armature falls, releasing the tension of the spring (S) and because the movable arm (M) is counterweighted it returns to the stop post (P^1).

When the pressure is decreased to the minimum value, the contact (C) again completes the relay coil circuit by engaging contact (C^1) and the cycle of operation is repeated.

The case is tapped and drilled at the bottom for the pressure pipe and electrical connections.

Cleaning Goods Before Finishing.

BY RAFFAELE SANSONE.

In using modern dye, bleach or print-works it should be the aim of the manufacturer of all classes of cotton goods to facilitate and reduce in every possible way the work of the finishing plants to which their goods are entrusted, and avoid a useless consumption of reagents, coal and labor. For this purpose a series of precautions and dispositions could be taken with such cotton fabrics which could be summarized as follows:

1. The protection of the goods for avoiding during their transport any deterioration or the accumulation of impurities or dirt.

2. The storage of the goods under the most rational conditions.

3. The examination of the condition of the goods on their arrival, before their consignment in the works, and before their delivery to clients.

4. A treatment for eliminating mechanical impurities or any easily detachable impurities.

The protection of the cloth during its transport on the railway or on the trucks to the point of treatment from the works of manufacture, or during the storage in the railway stations or ports, plays a very important part toward avoiding deterioration or the entrance of impurities. When the finishing plant is not very far from the mill, or is at a distance of a few miles from this point of storage, the cloth is often changed on open carts, and takes

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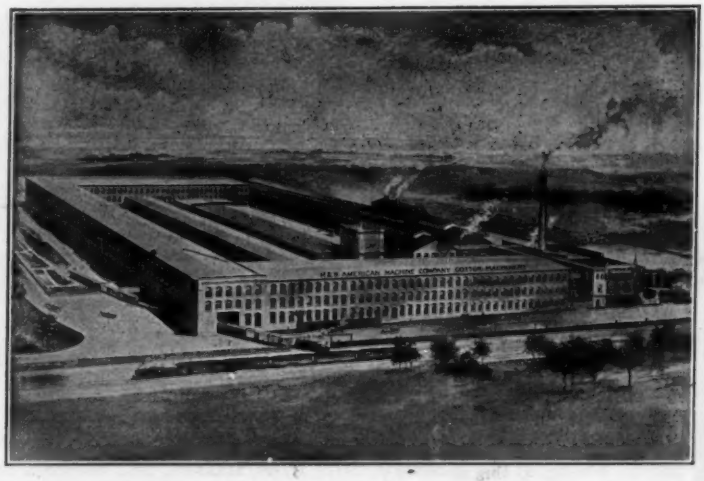
COTTON MACHINERY

Opening and Picking Machinery

Card Room Machinery



Spinning Room Machinery

Twisters for Wet or Dry Work

With Band or Tape Drive

H. & B. AMERICAN MACHINE COMPANY

PAWTUCKET, R. I.

up during the journey water, mud or dirt, besides often serving as a bed for the carters. In this way it accumulates various quantites of impurities, that have later to be eliminated.

This causes a considerable waste of time and a useless consumption of chemicals, without considering that exposure to air and water can bring about in cases where the goods are not treated at once, the formation of mildew, the weakening caused through the fermentation of the starchy matters, etc., which develop in the works of treatment. The finishing plant is often accused of being responsible, and is frequently asked to pay the damages.

Such troubles may be avoided in part by covering over the carts with heavy impermeable cloth covers, and by disposing the pieces of cotton cloth in such a manner as to take up as few impurities as possible. For long distances the goods should be suitably baled, a covering material being used that offers the best protection at the least cost. The best packing material for this purpose at present would be the so-called cloth lined packing paper. This has, however, the inconvenience of being very expensive and difficult to obtain. The employment of a cotton cloth or jute cloth of close construction might be suggested that has first been rendered impermeable through a special treatment, and that could be employed over and over again until completely worn out. However, the point to be emphasized is the use of some suitable cover.

As soon as the fabrics arrive in the works they are placed in storerooms where they await their turn for treatment. Here they must be protected against the action of dampness, dust, acid vapors, insects, mildew, etc., and they must be placed in such a manner as to avoid confusion and loss of time during the storing and discharging operations.

In some plants occasional bales of the goods are submitted to an examination or inspection. During such an examination, it is usually the custom to cut samples of the fabrics examined, that are kept for reference or are sent to the laboratory and submitted to special tests.

The precleaning of fabrics is for the purpose of freeing them from mechanical impurities and dust that they have taken up during the weaving operations, during their transportation from the weaver to the finisher, or during storage. The operation is accomplished usually on machines of special construction, where the goods are treated more or less energetically in accordance with their strength, or construction. The operation, if it is conducted with sufficient energy, facilitates the operations of bleaching that follow, as it is possible to eliminate substances that during the boiling out process would color uselessly the cotton material.

In another apparatus the surface of the cloth is cleaned first on one side by two revolving brushes, that turn in opposite directions, being then submitted to a beating operation carried out by three light sticks moved through a pair of wheels that turn on their axis. From the first series of brushes and beaters the cloth passes under the action of a second series, that clean it on the same part as before, is is then brushed for the last time on both sides. During all such operations the cloth is kept under tension and makes its exit ready to be delivered to the singeing department.

Notes About Men You Know.

W. C. WALDO the manager of the textile department of the Veeder Mfg. Co., of Hartford Conn., spent several days in Atlanta during the past month. Mr. Waldo came south primarily to attend the convention of the Southern Textile Association at Columbus, but owing to the indefinite postponement of that convention, which was announced about the time that Mr. Waldo reached Atlanta, he visited a while with his many friends in that city and then departed northward stopping at some of the principal mill towns en route.

FREDERICK L. PEECH, the late treasurer of the well-known firm of Peech Sons & Phillips Company, converters and mercerizers, Camden, N. J., was one of the victims of the recent epidemic of influenza, dying from pneumonia, as a result of the former disease. Mr. Peech was born in London, Eng., in 1885, coming to this country at the age of one year. He was educated at South Jersey Institute, Bridgeton, N. J., and the Drexel Institute of Philadelphia. Immediately after graduation he became connected with an iron and steel concern of New Castle, Del., and later, about six or seven years ago, helped to organize the plant of Peech Sons & Phillips Co. He was one of the most popular men in the mercerized yarn field and had a multitude of friends in the textile industry.

E. L. EVANS has been appointed superintendent of plant number one at the Bound Brook Oil-less Bearing Co., Bound Brook, N. J. He was formerly chief inspector at this plant.

C. L. FAULKNER has resigned as superintendent of the Eatonton Cotton Mills, Eatonton, Ga.

J. L. MADDEN has resigned his position as overseer of spinning in the cotton department at the Atlanta (Ga.) Woolen Mills.

CHESTER JOHNSON has been appointed second-hand in the spinning room at the Monroe (Ga.) Cotton Mills.

T. R. JOHNSON has accepted a position as overseer of spinning at the Scottdale Mills, Scottdale, Ga.

N. G. MAUNEY has accepted a position as overseer of carding and spinning at the Eatonton (Ga.) Cotton Mills.

E. L. SHERIDAN has resigned as overseer of spinning at the Jefferson (Ga.) Mills and has accepted a similar position with the Monroe (Ga.) Cotton Mill.

R. B. HUNT has been made night superintendent at the Hamburger Mills in Columbus, Ga.

WALTER MILLER, superintendent of the West Huntsvills (Ala.) Yarn Mills, died recently of Spanish influenza.

J. R. STOTT, superintendent of the Poulan (Ga.) Cotton Mill for a number of years, died recently from typhoid fever.

LEFT TO RIGHT, SECRETARY A. B. CARTER OF THE SOUTHERN TEXTILE ASSOCIATION AND G. E. MOORE, SUPERINTENDENT OF THE J. M. ODELL MFG. CO. BYNUM, N. C.

L. C. MCALLISTER has resigned his position as overseer of spinning at the Scottdale (Ga.) Cotton Mills.

B. F. BARNES, SR., has been appointed superintendent of the L. H. Gilmer Mills at Millen, Ga.

C. A. HOLT has been promoted to overseer of weaving in the tire fabric department of the Thomaston (Ga.) Cotton Mills.

WILLIAM DUPREE of Stonewall, Miss., has accepted a position as overseer of weaving at the Indian Head Mills of Alabama, Cordova, Ala.

BENJAMIN WHITE has resigned as overseer of spinning at the LaFayette (Ga.) Cotton Mills.

W. E. CHESSWELL has resigned his position as southern representative of the Sterling Ring Traveller Co. and accepted a position traveling for the Seydel Co. of Jersey City, N. J.

MATTHEW OUSLEY, southern representative for the U. S. Ring Traveler Co. for a number of years has resigned his position and it is stated that he is to represent a large machinery concern.

GEORGE HILL has resigned as overseer of spinning at the mills of the Morgan and Hamilton Co., Nashville, Tenn.

LEFT TO RIGHT, N. F. ESTY OF MONTGOMERY & CRAWFORD, SPARTANBURG, AND T. W. KIRKLAND OF HOLYOKE, MASS.

Ready to Protect The Cotton Industry

THE Pyrene Manufacturing Company is again able to supply Pyrene fire extinguishers and liquid.

For four years the United States and Allies used Pyrene on motor trucks, war vessels, airplanes, munition plants---wherever the fire hazard existed. The military need for fire protection was so great that the entire output was required.

The war has shown that Pyrene is the single greatest weapon to put out incipient fires—and all fires are small fires first.

Pyrene is highly effective on cotton fires. Pyrene liquid is a degreasing agent. It penetrates the oily cotton fibres where a fire may smoulder for days. Besides Pyrene liquid will not damage material or equipment.

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Second: a careful standardization before delivery. This insures uniform shipments so that the user can depend on his colors always coming to him the **same.**

Third: the policy of "quality first" always, plus the determination to build a permanent 100% American Dyestuff industry.

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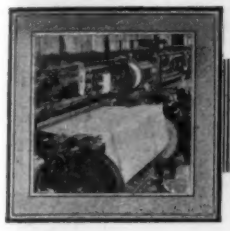

How Other Men Manage

Practical Discussions by Cotton's Readers on all varieties of Mill Subjects

Opening and Mixing.

EDITOR COTTON:

The ideal way to get the proper mixing, would be to buy a year's supply of cotton at one time, separate it into different grades, and run each day a proportionate per cent of each grade. In this way you would have the same mix the entire year, but since very few mills are in a position to buy this way I will discuss the subject so as to apply to all mills, whether they buy a week's, a month's or a year's supply at one time.

Take a medium size mill that uses about 42 bales of so called middling cotton in a 10-hour day, that only buys two weeks' supply in advance, and that has six warehouses. While we are using from three of the warehouses, we are receiving, grading and storing in the other three. For convenience we will mark the first warehouse with the letter A, the second warehouse M and the third warehouse B. Then we will divide each warehouse into three sections numbered one, two and three. In this way we will have A—1-2-3, M—1-2-3 and B—1-2-3.

We will first grade the cotton by type into three lots. While it's all bought for middling there's enough different types or classes so we will pick an average bale to go by and class it M. Then all bales above or a better class than that one we will class A, and all below, or in a lower class we will class B, until we have tagged and classed the entire lot, whether one carload, or the entire two weeks' supply of 504 bales into the three classes or types. We will then pull the staple of class A and take a bale of average length to go by, and mark the tag on that bale section 2. That bale will then be marked A, section 2, and on all bales that the staple is shorter, mark the tags section 3, and on all bales that the staple is longer, mark the tags section 1, and all bales that the staple is the same length as the first bale marked A section 2, mark them the same.

Then we will have class A divided into three lots according to the different length staple, and tagged and trucked into the A warehouse. Then class lot M and lot B in the same way according to the length of staple as we did lot A, and continue this system of classing until we have the other set of three warehouses empty, when we can then commence the same way with these.

For an example, suppose use about 42 bales in a 10-hour day, two weeks' run would be 504 bales, and classing as shown, we have in warehouse A section 1, 24 bales; section 2, 36 bales; section 3, 36 bales, or a total of 96 bales in warehouse A. In warehouse M, section 1, 60 bales; section 2, 120 bales; section 3, 72 bales, or a total of 252 bales in warehouse M. In warehouse B, section 1, 48 bales; section 2, 96 bales; section 3, 12 bales, or a total of 156 bales in warehouse B, or to make it plainer arrange it like Figure 1, Figure 2, and Figure 3.

		Total	Daily			Total	Daily			Total	Daily
	1.	24	2		1.	60	5		1.	48	4
A.	2.	36	3	M.	2.	120	10	B.	2.	96	8
	3.	36	3		3.	72	6		3.	12	1
Total		96	8	Total		252	21	Total		156	13
		(Fig. 1.)				(Fig. 2.)				(Fig. 3.)	

The foregoing would give us 8 bales out of warehouse A, 21 bales out of warehouse M and 13 bales out of warehouse B, daily, which would give the 42-bale mix for color, dirt, trash, etc. Then we would have 11 bales out of the three sections marked 1; 21 bales out of the three sections marked 2; and 10 bales out of the sections marked 3, daily, which would give the 42-bale mix for staple.

The foregoing method can be applied to all conditions whether the mill is buying any certain grade or just buying "cotton." Of course in either case we would have to look out for stray bales of long staple and dispose of these and this system of grading could be used where we were using long staple cotton altogether.

If we had this system of grading *into* the warehouses, the mixing would be simplified to a certain extent, whether we were mixing by hand or with bale breakers, and a suction or blower pipe. If mixing by hand the entire 42 bales should be opened at one time if we have enough spare floor space and opened one day and used the next, but if there isn't floor space to permit this, we can take two bales from sections 1, four bales from sections 2, and two bales from sections 3, taking two bales from A, four bales from M and two bales from B, which would give us five mixes of eight bales each for the day with two bales left over that could either be carried over or put one bale back in the last two mixes.

If we were using bale breakers, suction pipe and condensers with an automatic feed, we could open four or eight bales as shown, or any number that we had room to put down, and feed right from the bale and get good results, and a better mix than we could possibly get opening and mixing by hand, for the air in the cotton pipe opens the cotton out to a greater extent than if opened on the floor for several days, also the automatic feed mixes it in the hoppers more regularly than it can be done by hand.

Of course the number of bales from each warehouse, and from each section would have to be governed by the way the cotton graded into the warehouses, but if the foregoing system is followed we will get as good a mix as it is possible to get for the entire year.

A. L. A. (Georgia).

The Detroit Graphite Co., Detroit, Mich., are issuing bulletin No. 1 entitled "Letters from our Men in the Service" which contains interesting data right from the front. This company advises that they have a few of these bulletins for distribution among those who may be interested in the material.

Only One Way Over

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ANCHOR POST FENCE
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Anchor Post Fences

A Study in Human Nature.

EDITOR COTTON:

"Honest Bill (Ky.)" has given his views in the March issue of COTTON, on keeping help satisfied, now I wish to give mine on how I try to hold help. To begin with, there is no such thing as keeping help satisfied. It is not human nature to be satisfied. With the surroundings ever so closely watched you will always have a certain amount of help who will be enough dissatised to cause you the usual amount of worry, while there is a certain amount that will not give you any trouble about anything much, but will come in every day and work throughout the day and you never hear anything from them.

"Honest Bill" puts everything up to the foreman, inside the mill as well as on the outside. On this I differ with him, as it is always best to have some other leader on the the outside, but the foreman must work in conjunction with this outside leader in entertaining the help in some form. The class of entertainment must be some of the latest developments of industrial service, for the mill workers of today keep up with the latest things going. This outside man should never discuss the happenings of the inside of the mill no more than he can help, pass it up in some sort of a loyal way, taking care not to cast any slurs about the foreman in question, but take notice as to the attitude in which the conversation is being discussed by the help on the outside; then if it's the fault of the foreman the first chance should be taken to talk it over with him. If it's not his mistake, the help will soon find it out, so there's no harm done.

Now, when you are on the inside of the mill, the first thing to let them know is that you mean no foolishness, be courteous with all, taking time to explain any little thing that they may ask, for it's little things that cause the most misunderstandings, for usually the big things need no explaining, they are plain enough for any one to see. Have a good system of rules for your department and then stand by them in a good natured way.

Remember one thing, "Let patience rule you and not passion," never show your vexation more than you possibly can help. Take everything quietly and in a good-natured way even though it does go against the grain a little. Lose your temper and you've lost about all. In that state you cannot settle any difficulty properly. Take time to consider both sides of every difference that comes up for your consideration, and should one of them be so ill tempered that he cannot wait for you to think and consider both sides of a story let him go, for when he gets cooled off he will then see where he has made a mistake, and it's better for them to see their own mistake in their own way than for you to try to force something upon them that they cannot see.

Keeping in close touch with them is of the utmost importance, but then, things will happen that you do not see, the things that you do see hardly cause any differences if you are looking after your end of the authority, for you will adjust the differences without any row between the parties. Taking time to consider the things that you do not see preparatory for making decisions on them is the best way I ever found. I mean by this the best way to come to a satisfactory decision, is to walk around and not say anything much for a while and watch and see how things look. Be cool and be thinking but appear to be not much interested, (after you have separated the parties who have had a misunderstanding). You can soon find out how the sentiment is, and in most all cases the sentiment is going to be the right thing, for when you have the sentiment of your help with you everything goes well, and in thus waiting and giving the thing time to work out a little, you most always give your decision in harmony with the majority and in so doing you gain the good feeling of the operatives, and when help are cooperative all goes smoothly and well.

It's not a question of not getting the money to live on these days for they are all getting it, and when you find one that is not living as well, apparently, as you think he should be, barring sickness or accident of some kind, it is cost of high living, not the high cost of living. When a cotton operative these days has to borrow money to get the necessaries of life, he is either blowing his money wastefully or doing something with it that he should not, or he is not working regularly enough and should be cited to the "work or fight" clause in our government's ruling.

When the money question is set aside, the most important thing in the mill to consider, is the running of the work. That keeps more help than anything else. When the work runs well, all other things being up to the standard such as the conduct and rulings of the foreman and his assistants, there is little desire to change. The machinery must be watched at all times to keep it in the best of shape. Even when in good condition the humidity (inside) must be closely watched, letting too many windows be opened on a bad day, when the atmosphere on the outside is too heavy for the inside, or when the weather is too dry and windy, gets the work out out of humor. By closely watching the conditions you can keep the rooms in the right temperament, always watch for "fogs," they are the worst kind of humidity that anyone can let get into the card room.

The help do not want you to do very much, or to keep too close a tab on them. Fix the work so that it runs well and you've done about the best piece of work that can be done. Of course the outside condition of the mill and community must be good, clean and sanitary, the churches and schools must be attractive as well as good, but nowadays most all mills have educational features that are second to but few. The library and reading rooms and a lot of other things have not been very satisfactory in many communities. Most operatives had rather read at their homes if they are older heads, and if they are younger ones, they are there for a certain amount of sport and do not stay long at the library without sport, and too much sport will ruin the standard of the library department, unless there is a watchman on guard, then he is finally overcome and gradually gives way to the ones that will eventually spoil things, and by and by there are but few who will attend the library and get any benefit out of it without a heavy expense for upkeep.

Never promise a man anything only just what you can do, and do just what you promise. Encourage them to attend the Sunday schools and stay for church services; arrange for a good singing choir and try to get the choir to extend throughout the church making it solid by everyone singing, for good singing is one of the greatest features of the meetings.

"Honest Bill" says, "by all means be a good mixer." That's a very good thing, but you must not be too good

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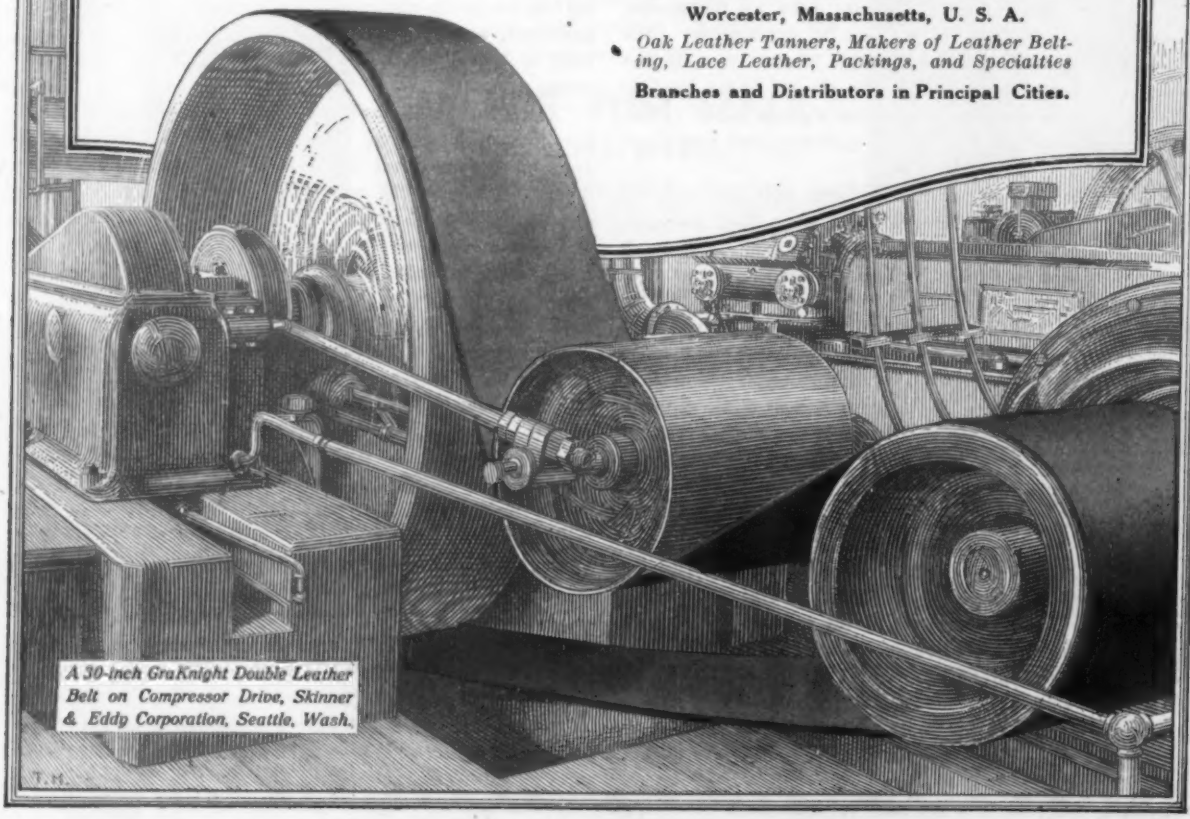

A 30-inch GraKnight Double Leather Belt on Compressor Drive, Skinner & Eddy Corporation, Seattle, Wash.

T. M.

a mixer. Stop and consider what is said about a *good mixer*. "Any kind of crowd he gets into he is with 'em," that's what is said. There are some things that they want to do, and will do, that they do not want to get out, that's human nature, for none are perfect. They have their "hobby" and it's best to let them have liberty where it does not conflict with the rights of others. Mix with them when they want you, and *not* when they do not want you. Don't draw the cords too tight around them. Allow them to have their fun, and when one so far wanders from the right thing, take him up individually and see if you cannot show him the right way. If you can't, let him go.

T. A. D. (Ga.)

Making Superintendents.

EDITOR COTTON:

It seems particularly apropos at this time to ask, where are the future superintendents and overseers coming from? Do our successful manufacturing mill men grow to their positions, or is it born in them to direct affairs to where you find the best drafts, speeds, equipment, etc.?

Undoubtedly many of the best men were born to their positions, and the preliminary qualifications consisted, as a matter of course, of routine work through the several departments until such a time as age and experience qualified them for the higher positions where they could exercise their natural ability in producing yarns or cloth expertly, and in such a manner that the mill corporation could pay dividends, build larger mills, or keep replacing worn out machinery.

Seldom will you find a superintendent who is really a pronounced success, who will say my father was a minister or a druggist, but instead will say "my father was superintendent or agent in this or that mill."

The question that confronts the mill men at present is, how many of our present overseers and superintendents have sons who, ten years hence, will say to visitors with the same seriousness "my father was superintendent or agent in this or that mill?" Not many, and I have my opinion by the actions of my own boys. The writer is a superintendent and, of course, in a position to give his own boys a chance to help themselves, but they seem to be ashamed to have the name of working in a cotton mill. Like myself, most fathers have accumulated a competence, so that in many cases their sons are given advanced education, they become draftsmen, engineers, doctors, lawyers and in other professions, while the coming mill men must be made from the ranks and their future success, while practically assured, will, in a measure, be due to machinery expertness rather than to ten or fifteen years of hard knocks accompanied by natural instincts for the business.

I, for one, have forced my boys to lay aside their pride and work in a cotton mill, for in doing so I feel that I am doing a duty by my country. I hope others at the heads of many cotton mills will follow my example.

Before closing, let me add that I am not against the textile school, for I believe that our sons should have the advantage of the textile schools where their primary education and natural ability give them a quicker insight into the intricacies of textile manufacturing, and their advancement is likely to be more rapid, as the industry grows and the old men drop out of the ranks.

Superintendent. (N. H.)

Meeting of the National Council.

The meeting of the National Council of American Cotton Manufacturers at the New Willard, Washington, D. C., Wednesday evening, November 13th, was featured by a comprehensive review of the activities of the council during the past year, and by the discussion of the many problems of readjustment as they are likely to affect the textile industry. The council's work on price fixing as representing the entire industry was sketched, and also such problems of immediate concern as contract cancellations, etc., were considered. It was voted, on recommendation of the War Service Committee, that the restrictions as to maximum prices after November 16 shall not apply to exports but

CHAIRMAN-ELECT ARTHUR J. DRAPER.

that this matter be placed in the hands of the Export and Import Committee of the council, of which D. Y. Cooper of Henderson, N. C., is chairman and John Lawrence of Boston, vice-chairman.

The feature of the meeting was the resignation of Stuart W. Cramer of Charlotte, N. C., as chairman of the council and the election of Arthur Draper, also of Charlotte, as his successor. Mr. Draper is president of the American Cotton Manufacturers Association, and one of the most influential and representative of Southern manufacturers. Mr. Cramer is a former president of the American Association and chairman of its Legislative Committee. His reason for resigning was the extraordinary press of duties as a member of the Board of Reviewers to the Treasury Department and the inability to give as much of his time as required to the augmenting responsibilities of the Council. The Council is planning many large enterprises in connection with after-the-war readjustments and the duties of its chairman is constantly growing. Mr. Draper

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The Original Daylight Saver

Dixielite was on the job saving daylight in factories, mills and warehouses long before anyone thought seriously about turning the clock forward an hour.

Dixielite is a perfected white enamel finish for walls and ceilings. It brightens up the inside of a workroom like the sun brightens up things after a storm.

Put this Daylight Saver to work in *your* mill. After the first cost of putting it on the walls and ceilings, it never costs you another cent. It never goes on strike—never demands any of the profits it makes for you—is always on the job harnessing the good old daylight and reflecting it all over the workroom.

You know how a clean window transmits so much more light than a dirty one. So it is with woodwork painted with Dixielite. All the daylight that comes in the windows is utilized. It is evenly distributed. As a consequence the operatives work better and faster. They work under more hygienic conditions. Their eyes are saved. They are more contented. There are fewer accidents. And besides, you're saving money all the time in light bills.

May we send you a sample of Dixielite—absolutely free? Write today and begin conserving daylight in *your* mill.

WADSWORTH, HOWLAND & COMPANY, Inc

139-141 Federal St. *Makers of Bay State Brick and Cement Coatings* **Boston, Mass.**

has been a member of the Council's Executive Committee and has been shouldering many of its responsibilities during the past year. His selection is therefore regarded as very happy. The Council voted its high appreciation for the services of the retiring chairman during the past year.

The National Council is the organized agency whereby the textile industry, as represented by the National Association of Cotton Manufacturers and the American Cotton Manufacturers' Association may handle all problems of national concern. It is the highest tribunal in the country insofar as the cotton industry is concerned, with offices in Washington and New York.

There were present at the meeting Stuart W. Cramer, Charlotte, N. C., chairman; Edwin Farnham Greene, Boston, vice-chairman; Arthur J. Draper, Charlotte, N. C.; Albert Farwell Bemis, Boston; James D. Hammett, Anderson, S. C.; Frank J. Hale, Boston; Gerrish H. Milliken, New York City; James R. MacColl, Pawtucket, R. I.; Capt. Ellison A. Smyth, Greenville, S. C., and Winston D. Adams, Charlotte, N. C.

A New Book.

"Yarn and Cloth Making" by Mary Lois Kissell is an economic study providing a college and normal school text book preliminary to fabric study, as well as a reference for teachers of industrial history and art in secondary and elementary schools. The book contains 252 pages and 89 illustrations. It is published by the MacMillan Co., 66 Fifth Ave., New York City.

In an introductory chapter Miss Kissell concluded: "A great difficulty in our education today is that household science is not approached in a more investigatory manner. For in the atmosphere of inquiry and research is teaching most effective. When viewed from this angle the study of practical subjects furnishes a liberal education. Convinced of this the author hopes that 'Yarn and Cloth Making' may be of wide use. Its suggestive and flexible arrangement adapts it to schools of all grades where the subject is taught and to localities where instruction is given under widely differing conditions.

Copies of this book may be procured through COTTON at a price of $1.60 each.

Building with Foresight.

"Building with Foresight" is the title of a new 42-page book just being distributed by Lockwood, Greene & Co., of Boston and Atlanta. Lockwood, Greene and Co., are architects and engineers and their ability in the textile field is so well known as to scarcely need description. They have an organization composed of men of skill and experience in every branch of industrial engineering. Their work not only includes the development of new industrial and engineering projects, but also the expansion and the reshaping of existing plants. Their service includes the planning of the undertaking, the designing of the plant, the layout of the machinery and equipment in detail and later superintending the construction. More than 2500 industrial plants in all parts of the United States have had the advantage of the experience and equipment of this firm.

This organization was founded in 1832 by David Whitman at a time when mechanical engineering was not an independent profession. In 1858 Amos D. Lockwood, a highly competent engineer and one of the ablest business men in New England, became its head. In 1882, when Stephen Greene came into the organization, the name became Lockwood, Greene and Co. After his death in 1901 the organization still further developed under the management of the present board of directors.

The pages of this book are printed on heavy plate paper and contain illustrations of mill construction ranging all the way from Alabama to Canada and from Massachusetts to China.

A Convenient Wheel Puller.

Mill mechanics frequently find it necessary to remove pulleys from shafts where they have become stuck or rusted from long years of use without removal. The difficulty of suitably handling a proposition of this character on the machine, without badly damaging the pulley or wheel is something that has attracted the attention of every mechanic at some period in his career. The Beach automatic grip puller which is illustrated herewith is quick,

strong, durable, efficient and simple and is designed to remove pulleys, gears, or other objects that have become rusted upon the shaft, without damage to the shaft or the object to be removed. This device has a positive grip, cannot unhook, and is adjusted to the work instantly. Extra long arms are also furnished with the device. The Beach puller is manufactured by The Greb Co., 172-173 State St., Boston, Mass. A circular giving full particulars will be mailed upon application.

New Directory of the Knitting Trade.

The thirty-sixth annual edition of the "American Directory of the Knitting Trade" for the year 1918 has just been published and is being distributed. 316 new knitting mills are reported in this edition making the total number of knitting mills reported in the United States, 2207, besides 169 knitting mills in Canada. In addition to the complete report of knitting mills, there are lists of manufacturers' selling agents, buyers, jobbers, department stores, and large retailers handling knit goods, as well as a classified list of dyers, bleachers, finishers and printers making a specialty of work for knit goods manufacturers. In this book a list of export firms handling knit goods is also incorporated. The price of this directory is $2.00 per copy. It may be ordered through COTTON.

Oxweld

Welding the Icicle

BREAK an icicle some snappy zero morning; thaw the broken ends a little over a candle; then let them freeze together. . . . You have welded the icicle!

That's the way oxwelding works on broken metals.

At high temperature, metals are liquid like water at ordinary temperature. Ordinarily—at the temperature at which you use them—the metals are "frozen" solid. . . . A break occurs; you melt the surfaces of the break with the terrific heat of the oxwelding flame; you remove the flame, and the broken parts "freeze" together as before the break happened. That's oxwelding.

Every time you throw away a broken metal part at your plant you throw away that much cash. For the new part you buy is not a whit better than the old part after oxwelding. *The new part may cost you 300 dollars; the oxwelded good-as-new old part—300 cents.*

Write to us for bulletins showing the advantages of oxwelding in your industry

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Going After Latin-American Trade.

BY S. G. WHITEHEAD.

When the president of the Unexcelled Hosiery Company decided to enter the Latin American export field, he sent the general manager of the company and the salesman selected for the foreign work on a short visit to New York to consult with well known shipping and export organizations. The manager of the information bureau of one of these large organizations, after a careful analysis of the situation from the manufacturer's standpoint, takes up the personal affairs of the salesman.

"You can finance yourself either by a Circular Letter of Credit, Travelers' Checks or by remittances sent to you at different points on the trip," stated the Bureau manager. "The most practical way would be to carry a circular letter of credit which will allow you to draw funds wherever you may be, in the currency of that country. this trip I would calculate at from three to four months and would suggest that you carry a letter of credit for $4,000 which should prove ample to cover your traveling and personal expenses.

Did you ever think about visiting South America from a selling standpoint? Well, most of us have, you are no exception. Furthermore, we always wonder what it would be like, and what problems would arise to plague the stranger who knew not the language of the countries he visits. Mr. Whitehead has tried to shed some light on these more or less perplexing questions in the current installment of his series. Answers to any special questions which may arise will be answered through COTTON'S Export Department on request.

"This is merely an engraved form of letter from your bank stating they will honor your drafts against New York or London, according to how the credit reads, up to the amount of the credit and according to the terms expressed therein. If you are in Rio de Janiero and require funds you will call at the bank which acts as correspondent for the one by whom your credit is issued and fill out a draft in duplicate for the amount desired. On this draft will appear the number and date of your credit and the amount you wish to draw. This amount will be endorsed by the bank on your letter of credit reducing its negotiable value by that amount."

"Will payment be made in United States dollars?" asked the salesman.

"No," replied the Bureau manager, "all payments will be made in the currency of the country in which the draft is drawn and in many cases a stamp tax is charged on all drafts, which tax will be deducted from the amount paid you."

"But," questioned the salesman, "if the banks should be closed, where could I negotiate my credit if I needed funds in a hurry?"

"That would depend on the city in which you were located at the time," countered the Bureau manager, "I would suggest that you carry an American Express Letter of Credit which would permit you to take Travelers Checks instead of cash on your draft. In this way you could draw on the credit for say $500 before leaving New York receiving that amount in Travelers Checks issued in denominations of $10.00, $20.00, $50.00, $100.00 or $200.00 according to your desire. These checks are well known throughout the world and are easily negotiable in hotels or steamers and could be used when you do not wish to be overburdened with foreign money."

Here Mr. General Manager interrupted with a question as to how much such a credit would cost and was satisfied that it was no more expensive than one issued by his own bank despite the added convenience.

The salesman then asked some questions regarding loss on exchange of foreign money when passing from one country to another. "On this point," said his advisor, "I would recommend great care as there is always a loss when exchanging money between different countries. Business in the exchange of actual cash is seldom handled by the banks, though the company has an interest in that business. You will, however, find in all large cities exchange houses who make a business of dealing in foreign money and it is always wise to inquire in two or three houses before making any exchange, as prices vary in different houses. It is a good rule to estimate the amount you will need in each country and draw only sufficient to cover your needs. If you find you are a little short in your calculation, use a travelers check in preference to your credit if the amount needed is small. Try to leave each country with as little money of that country as possible and by doing so you will save money.

"Now, if you can say when you expect to leave, I shall be delighted to refer you to our travel department where you can procure information regarding sailings, rates, hotels and other information pertaining to your journey."

Immediately after learning the details of the first lap of the proposed journey, our friends returned home, re-

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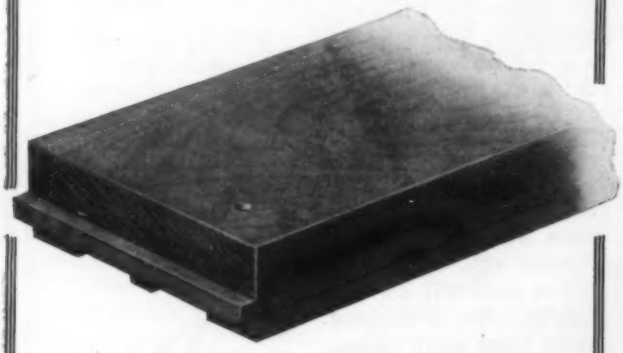
Always Dependable

There are so many different grades of maple flooring that it behooves the prospective purchaser to be extremely careful in his choice.

The one way of being sure of genuine satisfaction is to specify Superior Brand Maple,—the flooring with a character,—the flooring of absolutely uniform quality.

Superior Brand is cut from the best of Michigan maple,—thoroughly kiln dried and cooled before milling.

Every foot of it is rigidly inspected and guaranteed for milling and quality.



You'll Appreciate It More

After you have seen the floor down and in service, —and still more after years of steady use. Superior Brand Maple goes down smoothly and stays put,—no warping, —no slivers, —always sightly,—always efficient.

Where Service Counts

We are particularly proud of Nashville service. Located right in the heart of Chicago's shipping district, with switch tracks right at the doors—our facilities for prompt shipment are unexcelled. Our great steamheated, damp-proof Chicago warehouse, stocked with more than a million feet of hardwood flooring enables us to fill your needs regardless of quantities. Tell us what they are.

Write today, or better wire for delivered quotations any size, any grade, any quantity, anywhere.

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Manufacturers of Hardwood Flooring and Hardwood Lumber

ported the results of the trip to New York to the company officials and wired for a reservation on the boat sailing for Rio de Janiero early the following month.

The days following his return from New York were full of activity for Mr. Salesman. His sample trunks were filled and shipped to New York in readiness for the coming trip and three days before sailing found him in conference for the last time with the head of his company.

"Mr. Salesman," said the president, "I have given serious thought to the financial end of our prospective business and it appears to me that we should insist as far as possible on payment for our goods before they are shipped from this country. If we sell on ninety days sight, it means that we shall be outstanding our money for five months, more or less, which is a great deal longer than I care to wait for payment. Owing to the long distances and irregular sailings between our country and the ports to which we shall be shipping even a credit of thirty days means for us an extension of credit equal to ninety days in the domestic field. It is too long a time for us to tie up capital, and I feel that with the quality of goods offered, our new clients should be satisfied to pay at port of shipment accepting our guarantee as to quality."

"But," questioned the salesman, "if a customer desires to inspect the goods before payment, am I to refuse his order?"

"That will not be necessary," replied the president, "as our product is of such well known quality that I feel sure you will be able to convince your client that any fears he may have are ungrounded.

"I have arranged," continued the president, to finance your trip as suggested to you in New York and tomorrow evening a representative of the American Express Company will call upon you at your hotel to furnish a Letter of Credit and Travelers Checks to cover your expenses. Good luck to you and keep us posted when you arrive and leave each port."

That night Mr. Salesman left for New York and the following evening was visited by the bearer of his checks and credit.

"Mr. Salesman," said the visitor, after all business had been concluded, "I should consider it a pleasure to introduce to you an old client of my company who sails with you on the Vasari for Buenos Aires. He is a buyer of wool and knows a little about South America, having made the trip once before for another firm. He will be good company for you and may be able to advise you on some points whilst you are on the steamer."

The offer was immediately accepted and on the morning of departure Mr. Salesman and Mr. Buyer stood together on the steamer's deck watching the city of New York fade in the distance.

Lunch and dinner on the first day on board steamer are always somewhat of a rush as no one knows where to sit and the stewards do not seem to have settled down to their duties. Our two friends had decided to sit together and so arranged it that they were placed at the same table for the period of the trip.

From New York to Barbadoes the trip was uneventful. Mornings were devoted to walking on the deck, shuffleboard and deck golf; the afternoons principally to sleeping and reading, and it was curious to note how assiduously everyone was devoted to the task of studying Spanish and

Portuguese. This, however, lasted for only two or three days then everyone seemed to settle down to the lazy life of an ocean trip. After dinner the smoking room was the favorite resort for our two friends and every night they were to be found seated in a comfortable corner discussing their respective prospects in the southern republics. Bright and early on the morning of the eighth day out from New York the steamer reached the island of Barbadoes and the passengers came on deck to find themselves surrounded by a host of small rowboats in which were dozens of nigger boys who shouted for them to throw money into the water. One or two passengers did so and almost before the coins struck the water a dozen or more of the boys dived overboard to secure the prizes. Once in the water, they stayed there constantly retrieving the small silver coins which were thrown to them, They were like fish in the sea and their dark skins glistened in the early sunlight as they dived around.

After a while some of the boys climbed aboard the steamer by means of ropes and dived from different parts of the ship into the ocean. They seemed to have a regular schedule according to the deck from which the dive was made, and one small boy was particularly noticeable because of a dive he made from the boat deck, passing underneath the steamer and coming to the surface on the other side. Despite the interest aroused by watching the boys, the sight of land and the palm trees waving in the sun, caused a restlessness among the passengers, who, after eight days at sea were anxious to set foot once again on terra firma. Breakfast was served early and the passengers were informed that the steamer would not sail before seven o'clock that evening and they could spend the day ashore. After breakfast, the British officials of Barbadoes came on board, examined all passports and inspected the passengers giving to each one a small card, permitting him to land only when satisfied that his health and papers were satisfactory.

Messrs. Salesman and Buyer had no difficulty and were soon seated in a small rowboat, headed for the island, which was the first foreign land visited by the former.

Arrived on shore they were greeted by the usual crowd of hack drivers willing to drive them all over town, but passing safely by these island pirates, they walked through the main streets to better appreciate the novel scenes presented on every corner.

Negroes were everywhere and it was curious to note the keen desire of each and everyone of them to act as guide. A visit to the stores consumed the time before lunch and as everyone there spoke English, the language of the island, and accepted the American currency without question, our friends found no difficulty. After dinner an "auto" ride through the island passed away the afternoon and when the steamer sailed for Bahia, everyone was ready for bed after a most strenuous day of sightseeing.

Five days later Bahia was reached and under the blazing heat of a tropical sun, our friends were rowed ashore to the first Brazilian port of the journey. Having no more than seven hours delay at this port, business was out of the question, but Mr. Salesman decided to visit the stores, out of curiosity, to see the class of goods handled and so left his friend the buyer at the bank, having procured a supply of Brazilian currency in exchange for one of his travelers checks.

To the visitor, on his first trip, Bahia presents a very unprepossessing appearance. The market, located almost at the dock side is crowded with negroes who display their wares on open counters and there are so many flies around the eatables as to badly impair the appetite. Mr. Salesman walked through this market and was interested to see the different kinds of goods offered for sale Parrots of many colors, monkeys of various sizes, beads, shawls, hats, and a variety of tropical fruits unknown to him.

Having in mind the negroes of Barbadoes, who all spoke English, he tried to converse with the negroes of Bahia, but found they did not understand anything he said and then he realized that at last he had reached one of the countries of the South.

The city of Bahia is built in two sections. One part is along the seafront and behind that rises a steep cliff on the top of which are all the better class of stores and houses. It is reached by an elevator and to this the salesman directed his steps. After trying vainly to ascertain the fare from the man in charge of the elevator, he extended his hand full of small coins from which the attendant took the amount due and he was borne to the upper city. The difference from the part he had just left was very striking. The streets were wider and cleaner and he noticed quite a few stores in which were displayed a good quality of merchandise. Into one of these he entered and inquired the price of hosiery. The question being in English brought forth the usual smile from the clerk in the store and once more Mr. Salesman realized the difficulty traveling in a country in which a foreign language is spoken. After many gesticulations he pointed to the socks on his feet and suddenly remembered the Spanish word *"Cuanto"* which is the Englishman's primitive way of asking how much. The clerk immediately replied in Spanish which confused the poor salesman more than ever. Finally he offered a ten mil reis bill and received one pair socks and four thousand six hundred reis change. After careful figuring, he found his socks had cost him about $1.50 per pair and they were worth 25 cents per pair according to his factory price. This purchase with the bill was carefully taken on board ship to serve as a sample of the goods sold at that point.

Coming out of the store he was delighted to run into one of the passengers from the ship who spoke Portuguese and as the latter was alone and had nothing of importance to attend to, he was pressed into service as an interpretor. They re-entered the store and with the aid of his friend, Mr. Salesman was able to find out that the socks sold to him had been purchased from an American salesman, who had passed through Bahia previously, at a cost of thirty-five cents per pair. On inquiry he found that there was an interest in American goods if the quality was equal to the sample shown. After a short conversation regarding the quantity sold in Bahia and the quality desired, Mr. Salesman left the store making note of the information gained, that it might be used in the future.

With his new found friend he lunched in a hotel which was found to be a much better one than he had expected to find there. Luncheon was good though the food seemed strange and it seemed stranger to receive a bill for twelve thousand four hundred reis to cover its cost. However, on calculation, he found that this was only about three dollars American currency so the two visitors left, quite satisfied, and took a coach that they might see the city

in comfort and not become exhausted by the excessive heat. Just as they were about to start Mr. Buyer spied them, having been lunching at the same hotel.

"Hello! Salesman," he called, "how are you making out with the Portuguese? Can you follow it yet?"

"Sure," was the salesman's reply, "I follow it fine but can't overtake it. Jump in and join us on the tour."

All being seated they started and the salesman was surprised at the beautiful houses passed on the way. Palm trees stood in front of all houses and the streets were well kept, though paved with cobble stones which made riding a little uncomfortable. The trip through the city consumed an hour, after which the visitors returned to the dock tired and hot and glad indeed to take a boat for the steamer where a good bath and change of clothes put them in good spirits again.

(To be continued.)

Notes About Men You Know.

C. K. TAYLOR has resigned his position as general superintendent of the Magnolia Cotton Mills Co. at Magnolia, Miss., and accepted a position as assistant manager and outside superintendent at the Selma Manufacturing Co., Selma, Ala.

GEO. F. PAYNE, the genial superintendent of the Mount Royal Branch of the Dominion Textile Company's Mills at Montreal, formerly connected with one of the mills of the Mount Vernon-Woodbury Duck Co. at Baltimore, Md., is reported to have been quite sick with Spanish influenza.

However, the fact that Mr. Payne became the father of a very fine Canadian boy on October 1st, thus evening up his family to five girls and five boys, was so pleasing to him that he soon forgot his sickness in order to start a celebration because of the new arrival.

JAS. R. WHITMAN, formerly manager of the Cotton States Belting and Supply Company, has been made vice-president and general manager of the Fulton Supply Company of Atlanta, Ga., succeeding Walter McDonald, deceased.

G. R. COOK has been appointed night overseer of weaving and assistant superintendent at night at plant of Carolina Cotton and Woolen Mills Company, Draper, N. C.

W. F. CAMPBELL, who has been overhauler for the Dixie Spindle and Flyer Company, Charlotte, N. C., has accepted position of overseer of spinning at Nokomis Mills, Lexington, N. C.

F. W. SYMMES has been elected president and treasurer of Katrine Manufacturing Company, Fork Shoals, S. C.

W. E. MADDOX has accepted the position of carder and spinner at the Marcello Cotton Mills, Eufaula, Ala.

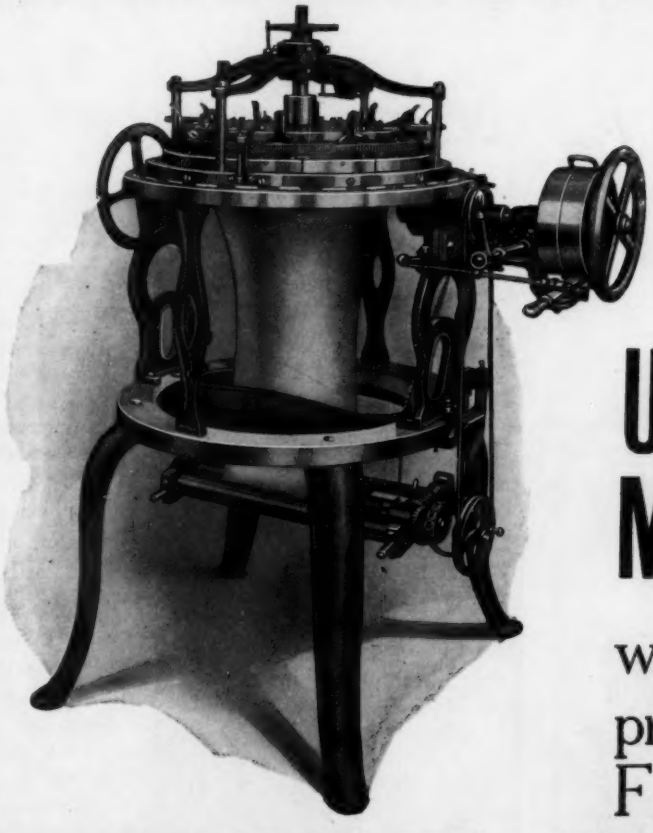
CHARLES G. DUBOIS has been elected vice-president of the Western Electric Company, Inc., according to recent announcements. Mr. DuBois entered the employ of the company in 1891 at its New York office, and occupied successively the positions of chief clerk, secretary and supervisor

of branch houses. In 1907 he became comptroller of the American Telephone and Telegraph Company and in this capacity inaugurated and supervised a comprehensive system of accounting for the Bell telephone system. During the winter of 1917-1918, Mr. DuBois was in Washington in the capacity of comptroller of the American Red Cross, which position he still retains. He is 48 years of age and graduated from Dartmouth College in 1891. He is director of the Mercantile Trust & Deposit Company, Inc., and other corporations.

MR. AND MRS. J. L. CARBERY, of Union, S. C., have announced the engagement of their daughter, Miss Elise Carbery, to Mr. Rivero, son of a former consul to the United States from Cuba. The marriage will take place shortly in Washington, where Miss Carbery is doing war work. Mr. Carbery is well known in mill circles, having been engaged in betterment work among the mills some years ago.

ROBERT KENT, agent of the Exeter Mfg. Co. of Exeter, N. H., died on Saturday, November 23rd, the funeral taking place on November 27th, the plant of the Exeter Mfg. Co. closing at 12 o'clock for the remainder of that day. In attendance were the many personal friends of this prominent manufacturer. Mr. Kent was for some time connected with the Pittsfield branch of the Exeter Mfg. Co., but his position as superintendent has for some years been occupied by Wm. Shaw, while Mr. Kent was agent.

KNITTING SECTION



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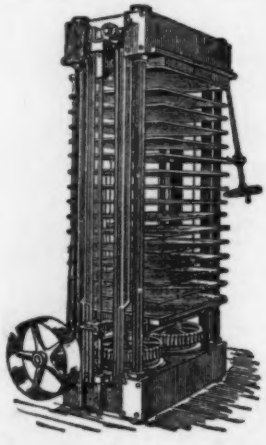

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Milanese Traverse Fabric

BY WILLIAM DAVIS, M. A.

There is probably no textile fabric so little understood as the subject of this article, the milanese or traverse loom texture, and a very small percentage of textile men are able to distinguish it when they see it. It is employed for a variety of purposes being made in web form and afterwards cut into the shape of the article required.

The reader will probably recollect the fine-faced fabric glove which was a prominent feature of all shows of haberdashers' goods. This glove was sold at a price that defied all competitition and occupied a privileged position which amounted to a monopoly which was world-wide. This article was splendidly produced and on account of its low price little attention was paid to it whilst all the time it was ousting other articles from the markets and home trade was suffering greatly in consequence. With the outbreak of hostilities the haberdashers suddenly missed the fabric glove, it was conspicuous by its absence and fuller inquiries were made regarding its origin and characteristics.

They were so skillfully manufactured that they deceived most people who had not made a full examination of their qualities. They were produced to imitate the fine soft handle of chamois leather and the nature of the finish gave them a skin-like appearance. Many thought them to be of woven origin on account of their lack of elasticity whilst others regarded them as knitted because of their loop-like structure. Not one in a thousand troubled to examine the back of the cloth and the greatest ignorance prevailed which was common to all countries except the country of origin. They were produced in Saxony, in a district around Limbach, and their great success in dominating the glove market was due to a specialization carried on for many years by the machine builders and manufacturers of this province.

It is well that the importance of the machine builder should be emphasized because without his skilled mechanical invention little progress would have been possible. The machine produced was a distinct departure from existing models and stands today entirely by itself as a textile-producing mechanism. It should be made clear that the machine aims at producing a fabric with qualities different to any other and the tackle required to execute this is so complicated and delicate in structure that it is not possible to adapt it to the production of patterns. If the mechanism produces long lengths of uniform webbing with accuracy and speed, this is all required of it under present conditions of work and the reason will be abundantly clear when we come to examine the mechanism.

Deficiencies of Knitted Fabric.

One of the great drawbacks to the use of ordinary knitted fabric for the common form of glove is that such a wide difference exists between its properties of stretch in width and stretch in length. The extension of length is less than half of the normal extension in width and when made into gloves, which depend for their comfort on a neat fitting material and one which will retain its shape, uniformity of size cannot be secured. In the case of thick winter gloves the fancy stitches of ordinary knitting can be used and the stretch reduced by certain processes of finishing, but when it is a case of an article which has to be used for dress occasions as a mere hand covering, the thick knitted article is not at all suitable. On the other hand the ordinary woven texture is unsuitable for the purpose, because it is too rigid in character and does not lend itself to obtaining a smooth skin-like surface.

The ordinary form of knitted fabric has been made in a very fine gauge and two of them fixed together with some adhesive substance so that the loops or wales on the face are in the normal position, but those on the back are turned through a right angle and come to lie sidewise.

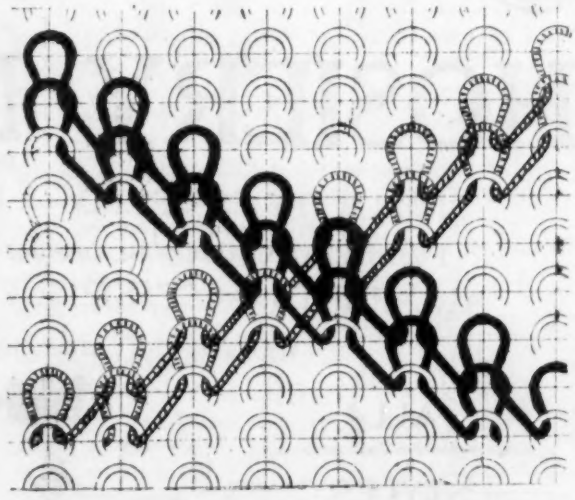

FIG. A. ENLARGEMENT OF MILANESE TRAVERSE FABRIC.

In this way the qualities of stretch in length and width are equalized and the resulting texture yields only to the extent of expansion in length. The system of sticking two fabrics together is obviously open to many objections and the device can only be termed a makeshift far from satisfactory. The difficulty in using two separate fabrics is that they tend to give a resultant cloth too thick for the purposes of the glove and if the individual fabrics are too fine, there is difficulty in getting them to adhere.

This discussion should have made clear the type of fabric considered ideal for the purpose of the glove which may be summarized thus: (1) The texture must be minute in stitch with a minimum allowance of space for interstices. This will give a fine surface of level appearance. (2) The properties of stretch in width and in length should be nearly equal, the usual width stretch being ample for all purposes. (3) The fabric should be dense in character so that with suitable finishing it may present the appearance of a complete textural whole.

Qualities of Traverse Fabric.

The fabric produced on the traverse warp loom is given in diagramatic enlargement in Figure A, an examination of which will show the principles underlying the structure. The diagram is in two sections of loops; one series are

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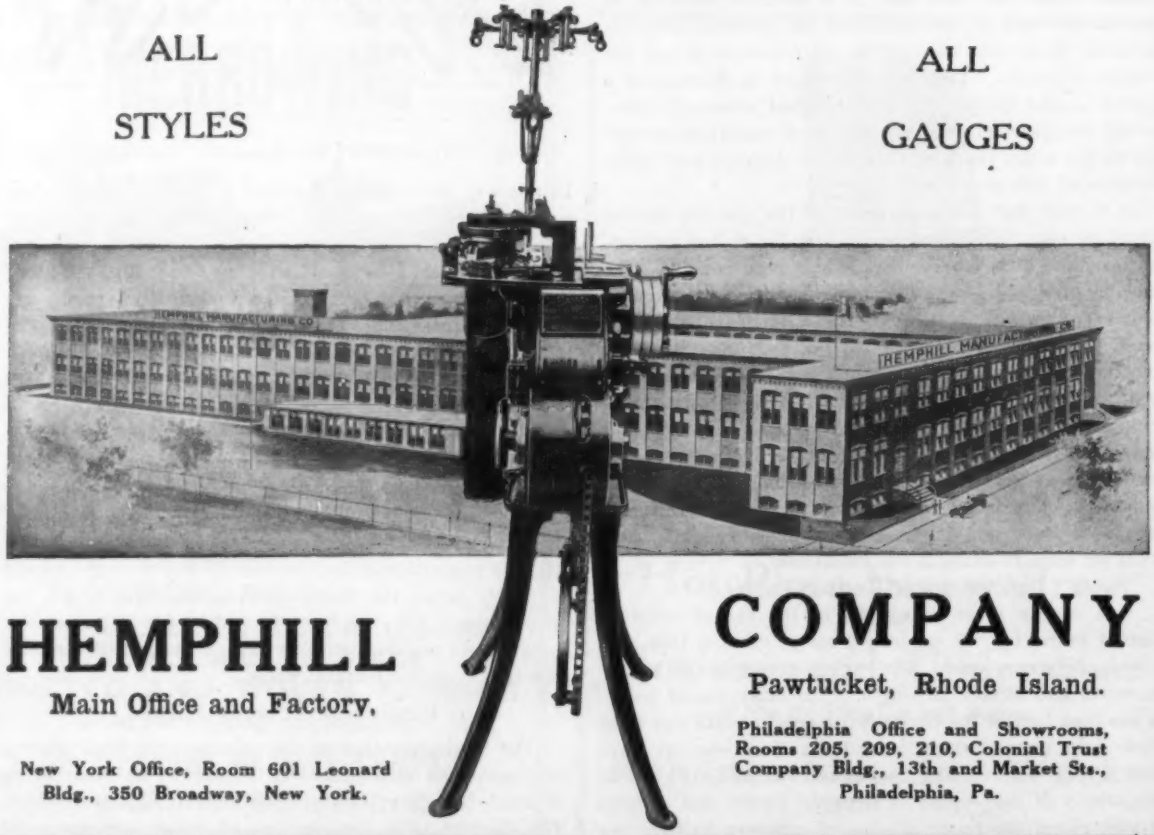

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dotted and run from the left hand bottom corner to the right, whilst the second series of loops run to the left beginning at the right hand bottom corner, being marked in solid black color. The two sets of threads meet in the center of the diagram and the appearance of the loops where these few loops intersect may be taken as exemplary of the entire fabric.

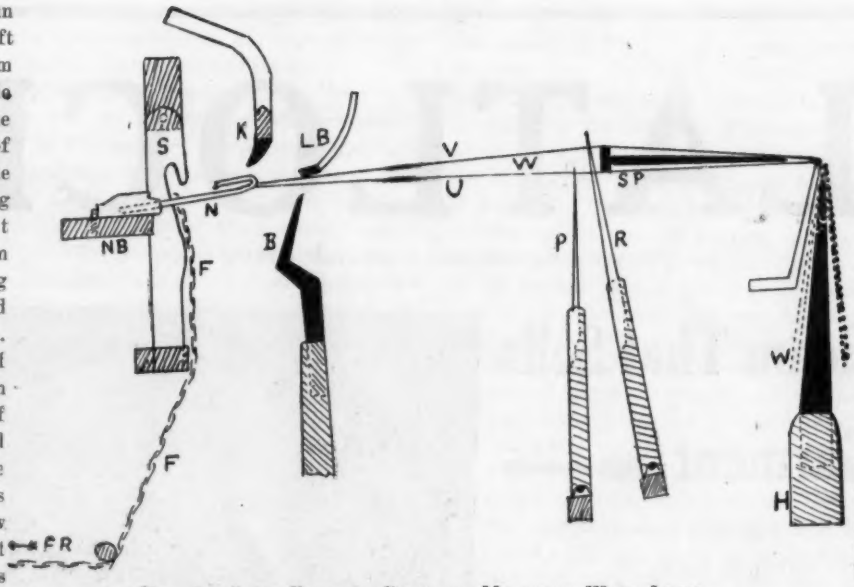

FIG. B. LOOP FORMING PARTS OF MILANESE WARP LOOM.

To determine whether or not a fabric is traverse warp loom texture, the observer should endeavor to discern the continuous traverse of the yarns either to the right or to the left and a thread which at the start was number one on the left of the cloth will eventually arrive at the position of last thread on the right hand side. In the diagram the dotted loops running from left to right in an upwards direction represent the front series and when a thread reaches the extreme right hand side of the fabric as one does at every course, it is immediately transferred to the back series of threads which travel continuously in an upwards direction towards the left. Thus if a thread be considered to start as number one on the under series of threads on the left hand side, this traverses the fabric in succeeding courses of loops until it reaches the position on the extreme right side. It then passes from the lower to the upper series of threads marked in solid black and at each course traverses the fabric back again at the left until it reaches a point at which it started. It is then transferred once more from the upper to the lower set of threads and the same stages of progress are repeated.

From the appearance of the loop it is evident that the stitch is formed on the principle explained for warp loom fabrics but this continuous lap to the right from one side of the fabric to the other and back again at succeeding courses makes it entirely different to any other form of texture at present made. In the ordinary type of warp loom product we have shogging or lapping to the side as a prominent feature of the pattern, but the shog was limited to a comparatively few courses as the bars had to return to the point from which they started. Also if the shog or sidewise motion was too prolonged a form of serrated edge appeared in the fabric which proved objectionable, this being the result of wholesale changing of the position of the threads at succeeding courses. This limitation in the side-wise movement is imposed of necessity because of the fact that the threads are fixed in the eyes of the points so that the threads are obliged to move with them.

As will be seen from the explanation of the mechanism of the traverse loom this is by no means the case there. The average gauge of the traverse loom fabric of the type just mentioned is from 20 to 28 needles per inch which are worked in fine cotton counts and as this sett is the same on back and face, it will be seen that this is equivalent to from 40 to 56 complete stitches per inch in the fabric counting both sides. It is therefore virtually a double cloth with front and back textures indissolubly united by the intimate interrelation of their loops. This also regulates the qualities of elasticity and gives the whole texture an even yield in both length and breadth and not so excessive as to prove troublesome to the retention of the correct shape.

When this texture is suitably finished, the cotton is usually raised to the surface on the teazles or gig and with the aid of a chemical finish the result is to give a fabric which is so fine and regular on the surface as to greatly resemble chamois leather or skin. The whole texture is quite thin and owing to the dense formation of the loops, it retains the heat of the hands in a most effective manner and at the same time is smart and becoming to the

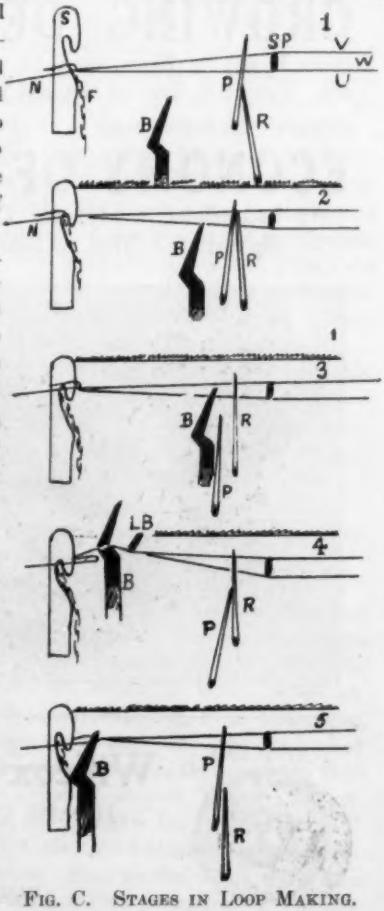

FIG. C. STAGES IN LOOP MAKING.

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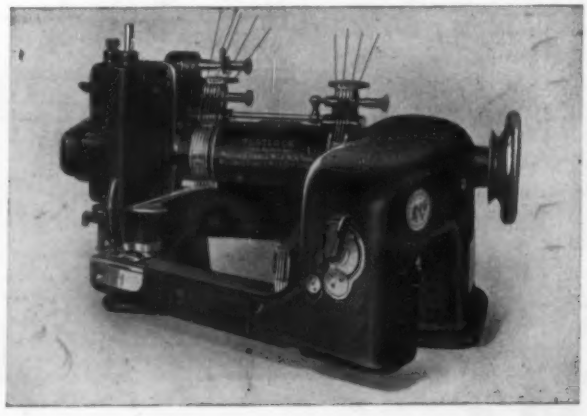

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wearer without the embarrassment of the high price usually attached to the real chamois leather glove.

Machine Mechanism.

For the reader who has followed the previous articles on the structure of the ordinary warp loom fabrics, it should not be difficult to understand the principles of loop formation for the kind of texture under consideration. The salient stitch-forming parts of the modern milanese or taffeta warp loom for making glove fabrics is shown in Fig. B. The entire machine is one of great complication of movement, and it is scarcely within the scope of this article to portray it completely, but a study of the diagram may serve to bring out the salient features.

The chief parts will be recognized as similar to those

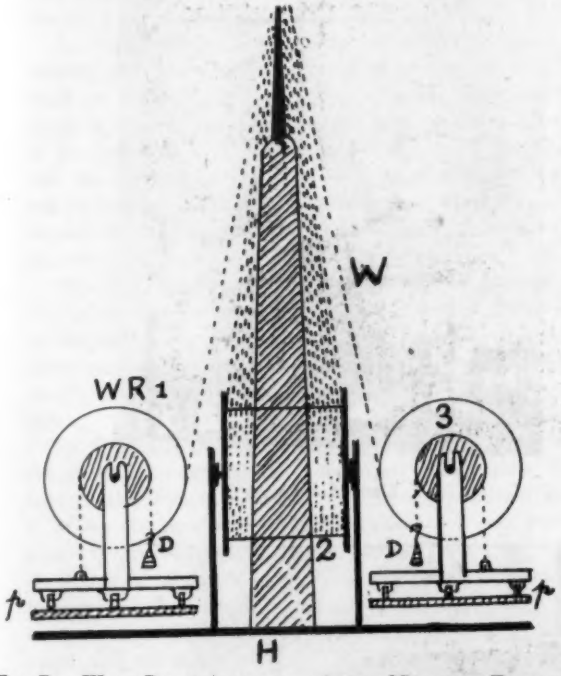

FIG. D. WARP BEAM ARRANGEMENT FOR MILANESE FABRIC.

of the ordinary flat loom, namely, the upright sinker S with one nose, the spring needle N which is fixed in leads in the needle bar N B and is sloping slightly upwards. The presser K is shown just above the needles and is of the ordinary kind which descends to the needle beards in order to press them into their grooves. The threads of the warp are marked W and are seen to be proceeding towards the needles over the warp rail H. The fabric marked F is descending vertically from the needles and passes underneath towards the fabric roller in the direction of F R.

Here the similarity of parts with the flat loom breaks down for the remaining pieces of mechanism are quite distinct from the ordinary warp loom. It will be noticed that the threads of warp W have a division made in them, the one series V being destined to move towards the right as already indicated and the second tier U moving towards the left. The division or shed is maintained by the separating bar marked S P, the part lettered L B comes down on the threads of the warp to assist in the loop formation and is known as the shogging or lapping bar.

The function of the guide bars is taken by the three sets marked B, P and R all of which are shown underneath the warp line. The first bar point B is as shown in bayonet formation which is so devised to exert the necessary control over the threads. The second bar P is a guide point bar which has a groove or eye from the bottom to the top so that the thread is able to enter or leave it as is required. The third bar marked R is similarly constructed except that its grooves or eyes face the points of the Bar P. Each guide has a point for every needle of the machine and with the usual gauge from 24 to 30 needles per inch some idea may be gained of the great conglomeration of fine wirework in front of the needles.

The two bars P and R work together to produce the traverse of the warp threads, and although their points are provided with an eye, it should be clearly understood that this eye is not enclosed but is open so that the thread can leave it or enter it as required. Thus it is that when the points take the threads to any given position, they can sink and leave the threads and slip back to a starting place once again and repeat the operation. It will be understood that these two bars with their open eyes cannot control the movement of the threads in every direction but only sidewise for the making of the traverse; they only place the yarns opposite the needles over which they are destined to form their loops and leave them there. When this is done the bayonet-shaped points marked B come into play with the assistance of the lapping bar L B and complete the loops in the ordinary manner.

In the course of loop formation each needle receives a lap from two bars one proceeding to the right and a second moving towards the left so that two stitches are worked on it making it a fabric after the nature of a double cloth structure. This contrary motion of the threads is rather difficult to understand and the division in the warp W should be noted. The upper series V, are moving constantly in one direction, in this case to the right, whilst the lower division moves gradually to the left. They are each moved in front of their new needles at each course by their respective bars P and R which then move back into striking position, once more clear of the threads.

This will naturally suggest the question as to what happens to the threads which reach the other side as one does at every course? A very ingenious mechanism exists for transferring a thread and when it reaches its extreme position on the right of the machine on the under set of points, it is transferred to the upper set of points and at the next course retraces its steps and travels in the direction of the left.

Formation of a Course of Milanese Loops.

The working of a course may be better explained and understood by a reference to the progressive set of sketches given in Fig. C. The chief parts taking a share in the formation of the course are shown by letters, which are S = Sinker, B = Bayonet point bar, P = back point bar or that farthest from the worker. R = the front point bar or that nearest the worker. S P = the separating slide for keeping the two series of threads V and U apart. W = the warp and the two lines give the two tiers V and U used in the fabric. F = the fabric which is moving downwards to the fabric roller. N = needles. This series does not show the actual stages of loop formation for the process of making the loop is quite elementary consisting of the usual laying of the thread, pressing and knocking over.

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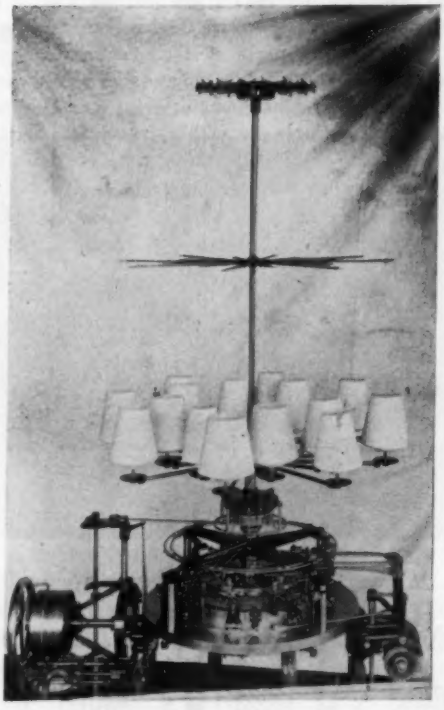
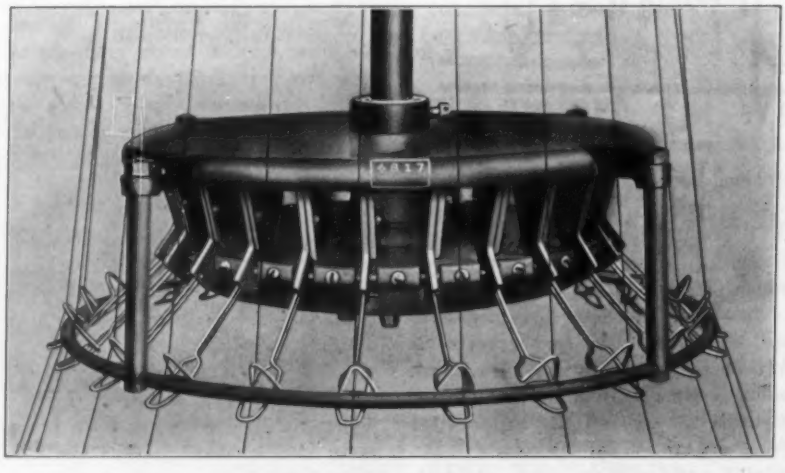


On Machine



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The five sections portray the general position of the chief stitch-forming parts during the making of a course of loops. In Figure 1 the bayonet point B is shown in a low position which is its usual place when out of action, well free of the threads. The upper series and the outside or front bar R is in contact with the bar P, sliding up the inside of its eye or groove to put iteslf into position for taking control of the lower set of threads v'.

In Figure 2 the needle is seen to have swept upwards in the direction of the throat of the sinker and the bayonet point has moved to the right towards the inside bar P. Of the points P and R the outside one R is noted to have progressed still farther upwards whilst P has correspondingly sunk so that the sharpened tips are now in contact and the transference of the threads of the lower tier to the eyes of the point bar R is taking place.

In Figure 3 the inside point P is entirely clear of the threads and the outside point R is in contact with the lower set of threads and makes the necessary sidewise movement, in this case under one needle and then over a needle to the left. As was mentioned before the bayonet point and the lapping bar L B require to co-operate in loop making because the points not having an enclosed eye cannot control the motion of the threads in every direction, they can only give them their side to side traverse.

This is fully shown in the stage of Figure 4 where the neck of the bayonet points are seen in control of the threads in conjunction with the lapping bar L B which presses down on the threads and keeps them firm during the lapping of the yarns over the points and the formation of the stitch.

In Figure 5 the course of loops is seen to have been completed with the bayonet points just relinquishing their hold on the threads. Already in Figure 4 the inner point P is seen to have moved with its sharp end into contact with the grooved eye of the point R. In Figure 5 this movement is completed and it has moved up between the threads to take control of the upper set of threads which in their turn will make their lap and form their course of loops with the assistance of the lapping bar L B and the bayonet point bar B.

In the case of the upper tier of threads the actual lap would be over one needle and under one needle to the right. There are two knocking over stages for each course, one for ordinary form of knocking over with the aid of the belly of the sinker and the other as shown in stage two where the loops are in the extreme upper end of the sinker throats. The proper discharging of the loops is of the utmost importance for successful work and next may be mentioned the necessity for absolutely correct adjustment of the points in the various bars. The making of the ordinary course as described is a process involving a great network of wire and needle and it is a marvel how such speed and accuracy is possible. Lightness is attained by having the hollow shafts which reduce the weight considerably, whilst the smoothness of running is produced by the cam principle of motion which has been adopted in most forms of knitting mechanism with such success. The power loom for making milanese traverse fabric can be operated about 80 courses per minute which is wonderful when we consider the fine sett of the loops.

General Contrasts.

If reference be again made to Figure A it will be noted that the fabric is there sketched as it is being worked on the frame, that is wrong side up and this is the side which faces the worker during the process of knitting. The top tier of threads marked V (Figure B) would produce the dotted section of loops which are seen to be progressing from left to right in the diagram and moving upwards one needle at each course. The series of loops proceeding in the opposite direction from right to left and worked in black would be produced by the bottom tier of threads marked U. There is, however, no permanent distinction between the botton and upper tiers of threads for all the time a constant transferance is taking place from the upper to the lower and vice versa, from the lower to the upper series.

All threads in the upper layer make at each course an advance of one stitch to the right and at each course therefore one thread reaches its extreme limit of progression, arriving on the last needle on the right. It is then transferred at once to the lower series of threads, which instantly reverse its motion by causing it to be the last thread in the bunch which are traveling to the left. Step by step and needle by needle the thread moves on its way leftward until after having formed a loop on every needle of the frame in turn, it arrives at the point from which it started. Nothing loath, the thread is again transferred to the upper layer and resumes its progress once more needle by needle and stitch by stitch to the right. The transferring of the threads takes place at each side by means of a finger which lifts the threads from the lower to the upper or from the upper to the lower set. As regards the actual shog or sidewise movement of the point bars P and R, if the upper bar be considered it shogs continually towards the right and its actual movement is to the right so as to give a net shog of one needle, but in the case of finer textures, the shog may be over two needle spaces as in the case of silk. Further than this there is no variation in its movement and no attempt is made to produce fancy patterns.

Beaming the Warp.

It will be clear that this sidewise movement of the threads of warp will entail a corresponding movement of the warp beam and the principle on which this is carried out will be understood by referring to the diagram of Figure D. This is in reality a continuation of Figure B and gives the lower view of the loom from the warp rail H to the floor. The warp rail is also marked H in Figure B and as the name indicates, it is used as a support or rest for the threads of the warp.

Obviously, seeing that the whole body of the warp threads are traveling constantly one set in one direction and another in the opposite direction, the warp beams must keep pace with this movement or a hopeless entanglement would ensue. In Figure D the warp beams shown are three in number marked W R 1, 2 and 3 and the total threads of the warp are divided proportionately between them. Beams 1 and 3 are shown in end section and are seen to have a drum at the side over which the weights marked D are suspended. As will be inferred these weights have to do with the tension of the warp yarns and can be regulated according as the fabric is required heavier or lighter in texture. If the tension is required tighter the weights at D would be increased and for a lighter tension the weights would be reduced in number. The tension and sett of the loops also depends on the tension of the fabric

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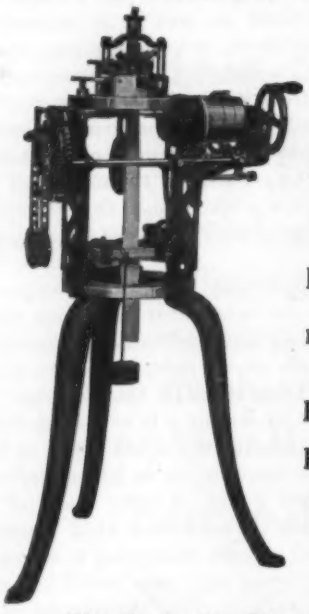

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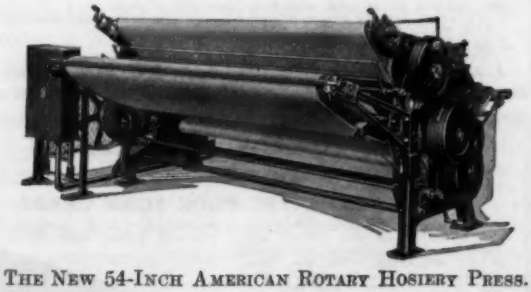
roller which can be altered so as to give tighter or slacker results in loop formation, so that the density of loops or the sett of the fabric depends on a proper adjustment of these two factors in relation to each other, just as in the weaving loom we require to have an adjustment of the let-off and take-up motions.

In the traverse warp-loom the let-off motion is negative in principle being produced by the hanging on of weights. Bobbin or warp beam number two is shown in front section and the threads as they are arranged on it will be duly noted, these passing upwards to the warp rail head. Each of the warp beams run on small wheels or pulleys marked p p at 1 and 3 and they are given an automatic motion so that a bobbin movec slowly along the front of the frame from left to right and reaching the other side, reverses its motion so as to move from right to left back to the starting point. This will be recognized as corresponding exactly to the movement of the threads in the lapping operations and the object of the warp beams is to keep in line with its threads at whichever position of the needle bar these may happen to be.

Otherwise there is little further to add, the threads are passed on to the beams to the required length as formerly described in detail in connection with warp loom fabrics, and the threads are drawn up into the eyes or the guide bars in their proper order. Firms which specialize in this fabric produce it in long webs so that the warps have to be made accordingly, the yarns generally used are very fine cotton counts, strong and of clean surface so as to present few obstacles to working on the points of the machine.

American Rotary Hosiery Press Now Made in Smaller Sizes.

The American Laundry Machinery Co. has recently made the addition of a 54-inch rotary hosiery press to their line. The press was developed because of the demand of many medium sized mills for a machine of smaller capacity The 54-inch has the same features of construction that have made the 100-inch machine standard in dozens of modern mills. This press is fast. It eliminates many operations which were necessary under the old methods of pressing hosiery. The work is uniform and perfect. The American rotary hosiery press is so easy running that girls can operate it. It does not tax the strength of the operators for there are no heavy loads to carry back and forth from the press. The production is uniform throughout the day—there is no "slowing up" in the afternoon hours. In these days of severe labor shortage, increased efficiency such as this is important.



THE NEW 54-INCH AMERICAN ROTARY HOSIERY PRESS.

The Knit Goods Market.

An element in the jobbing trade is having its revenge on knitting mills which have been slow in deliveries, and is canceling orders with the complacency of the freebooter.

Another element is taking a rational view of the situation which has developed since the signing of the armistice and is doing business "as usual."

It is the first mentioned class that has precipitated confusion in the trade that duplicates the happenings of 1907-8 and again in 1914. The confusion among mills, however, is limited to those which apparently took no cognizance of the approaching return to peace conditions and, in the exuberance of joy over a long rising market, neglected to make preparation for safeguarding against repudiation of orders.

It is the oft-told story of abnormal eagerness to sell and selling unnecessarily far ahead. Mills which in this respect gave no heed to the certainty of a receding tide or were themselves caught disregarding low-price orders and selling to the high bidder are paying the penalty, receiving little or no compassion from dealers who a few months ago bought madly in the expectation of a prolongation of the war and continued scarcity of merchandise, believing that in the event of an about face in the market it would be an easy matter to pass the buck to the mills.

A line in which there has developed no disposition to ask for concessions is ladies' silk hosiery, notably the full fashioned. One of the large eastern mills making high grade full fashioned goods, on November 16, five days after the signing of the armistice, accepted orders of an aggregate value of approximately $150,000 at the highest prices ever named by the mills. Deliveries run from January to April.

Some days before the armistice was signed a Broadway selling agency booked for its mills orders for ladies' mock-fashioned silk stockings totaling even more than the full fashioned order—and at last accounts the buyer was showing as much interest in the matter of delivery as at the time the order was placed.

Another line in which cancellations are conspicuously absent is misses' ribbed stockings, unsolicited orders for which, at good prices, are being placed by jobbers at the close of November. A mill specializing in this class of hosiery is selling regularly at $3 on size 7, rise ten cents, fall five cents. The stockings are made from 18's carded and weigh approximately two pounds on size 9.

Analysis of cancellations received by a half-dozen or more mills, agents and commission houses forces the conclusion that there is being engineered an organized movement to force prices to lower levels, notwithstanding there has been no dimunition in cost of manufacture. It is the expectation of some dealers that weak mills would prefer naming outrageously low prices to escape the possibility of carrying for a few months accumulations of high-price merchandise. And herein lies the injustice of the drive being conducted by a considerable element among distributors.

There is one class of merchants that would be warranted in canceling or seeking a compromise with mills—that class that is fearful of having shattered credit in the event that the readjustment period be prolonged for more months than now seems likely. In fact, the suspicion is prevalent that

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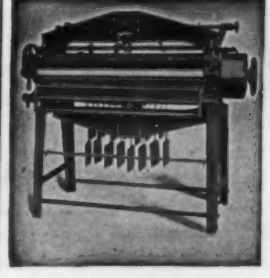

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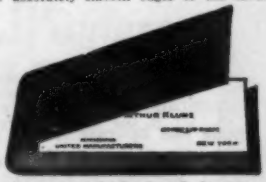

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some of the cancellations are a confession of a weak financial condition. Before deciding to not accept a cancellation it, therefore, would be regarded wise on the part of manufacturers to carefully scrutinize all the circumstances and thus be better prepared to pass on credit and methods of doing business when the revival sets in and there shall come a demand as insistent as in the past year.

It is realized that, after enjoying abnormally large profits for two years, there will be as much reluctance among dealers to return to pre-war levels as for shipyard and munitions plant employees drawing anywhere from five to ten dollars a day to adapt themselves to the lower wage scales that eventually must become effective.

However, by the same line of reasoning for arriving at a merchant's warrant for canceling a rising market the consumer would be satisfied in deferring purchases so far as possible until the bottom had been reached—a course leading direct to business calamity. This can be averted by the original source of supply taking and maintaining an attitude of self-preservation. First loss, if any, need be no heavier than the loss inevitable when mill prices are fixed by distributors.

Some of the cancellations no doubt are made in a spirit of retaliation, others under unnecessary alarm, but th fact remains that there had been concert of action among dealers to an extent that warrants the accusation that their arbirary action is intended to depress prices at the mill as part of a program for maintaining war time profits in distributing houses. It may be hard to lose the opportunities afforded by a constantly rising market and adapt prices and profits to a more nearly normal basis, and the situation is not unlike that in the shipyards and munitions plants, where the workers of yesterday were drawing whatever wage they demanded and now face a readjustment in which they are unwilling to participate.

It would almost appear that a somewhat powerful minority of the distributors have been stampeded. Some assuredly are acting without counting the eventual cost to either themselves or the manufacturers and consuming interests. For illustration, one of the large houses several days ago wrote a mill urging immediate delivery of the remainder of an unfilled order. On the day the letter was received by the mill there came a telegram canceling the order in which so much interest was shown but 24 hours before.

As instancing the recklessness of the abuse of the cancellation prerogative, an order for ladies' mercerized stockings placed nearly two years ago at $2.90 was arbitrarily canceled, in this case to the advantage of the mill, for the goods are readily salable at prices well above $3, and a large part of the order since has been moved. Another manufacturer—underwear—is two dollars per dozen to the good by reason of cancellation of an order accepted during the height of the boom but never completed because the mill accepted a government order, declination of which would have invited an accusation of indifference to national welfare.

One of the important Broadway, New York, houses selling the production of a number of mills is utterly disregarding cancellations, shipping out as usual and advising customers that the goods are going forward and must be accepted and paid for. A letter to one jobber which serves as a specimen of the message which goes to others sending cancellations read:

> "We have been delivering every dozen called for by all the orders we accepted, often shipping out low-price goods for which we could have gotten as much as 20 to 30 per cent more had we cared to let others have the goods bought by you. We accepted your order in good faith and did not cancel when the market was in your favor, and we will not permit you to cancel now. We shall hold you to the full spirit of your order."

Obviously this is not a time to trade in knit goods, more particularly from the standpoint of the manufacturer. It is a time for standing pat—for getting a bearing in strange seas. Any other policy, in the suddenly but not altogether unexpected changed conditions, may spell ruin; patience will avert it.

Knitting manufacturers may be guided by the stand taken by the Philadelphia Cotton Yarn Merchants' Association, which during the week of November 11 adopted unanimously a resolution to the effect that cancellations positively would not be considered on either government or civilian contracts. The Association of Cotton Textile Merchants of New York has taken a like stand.

What, in the opinion of leading manufacturers, should be the attitude of knitting mills is clearly stated in a letter of Arthur T. Bradlee of William Whitman Company in reply to a customer who sought to evade a contract. This document, which is viewed as so aptly fitting the situation that it has been adopted as a letter to the trade, follows:

> During the war we have done everything that we could for the interest of the Government, and during the reconstruction period we shall continue to cooperate with the Government in anything we believe is fair and for its real interest. We do not agree with you in the position which you take in regard to the general question of cancellation of contracts as expressed in your letter, nor do we believe the position fair or for the real interest of the Government. The validity of contracts of the Government and of civilians was never so important, in our opinion, as today, and if the Government and the larger and more reputable concerns of this country attempt to force cancellation without proper adjustment and recompense, they will undermine the business of the country and the confidence in the justice of both the Government and its people. We have been fighting this war for the value of a scrap of paper and we are equally interested to know what our Government's value of it is. If it is of no value it would seem as though we had fought this war in vain.
>
> The amount involved in your order is very trivial—the principle involved, however, is vital to the business interests of the country.
>
> While of course you may take any position that you may care to with your trade, we wish to clearly express our position in this matter, which is as follows:
>
> We have no contract with the Government—our contract is with you and as such we are not interested in any attempted cancellations by the Government with you except insofar as we can accommodate you in giving you your yarns, if possible, in other counts if you prefer them and we are in a position to make them.
>
> We repeat our telegram. We cannot cancel the order. The yarn is in process and you will have to settle the matter with the Government in regard to your sub-contracts.

Action by knitting manufacturers, such as the yarn interests have taken, should serve and probably will serve to make the cancellation flurry short-lived. Besides, many mills will be busy for the remainder of the year on orders about the stability of which there can be no question. The executive of one such establishment says: "We are making about 35,000 jerseys and about 300,000 scarfs for the Navy and have enough work to keep all of our machinery going to January 1. Why worry now? If we must worry at all it will be after something has happened to worry about."

This same sentiment prevails among a number of prominent jobbing houses, according to the Dry Goods Economist of November 16, which contained among others the following statements:

Clawson & Wilson Co., Buffalo, N. Y. "Business is to be had in large volume by those who go after it right."

John V. Farwell Co., Chicago. "We expect the business of this country to be large; that there will be a large demand for merchandise the world over, and we have made plans for selling some goods for export."

The Black Cat Textiles Company is quoted as saying it will try to supply its established customers before paying any attention to export demand, and will endeavor to largely increase its output in all of its mills to full limitations of available labor.

That export trade is developing is clearly shown. A Washington, D. C., concern desires the names of manufacturers in a position to sell in the Balkans. Denmark is in the market for knit goods, and it is expected Mexico, formerly buying heavily in Germany, will become a good customer of the United States. A sharp reversal of the present stagnated situation is almost a foregone conclusion, and interests which have patience and will not yield to fear and panic will be the gainers. The weak and easily scared are confronted with tempestuous seas.

It is regarded in the knitting trade as unfortunate for all interests that the government did not fix the price of cotton. To have done so, it is believed by many, would have served to stabilize the market during the transitory period, as in the case of wheat, the grower of which is guaranteed an established price for his crop of 1919.

Control of cotton, it is contended by textile people, would have afforded an opportunity for a slow but steady readjustment of distribution as in the case of wool, concerning which the following has been issued by the War Industries Board:

> For the present any mill can buy a reasonable amount of wool for civilian purposes at the Government issue price. By a reasonable amount is meant about one month's supply. Wool can be procured from the Government Wool Administrator in Boston, Philadelphia or Chicago.

It is stated at the wool section of the War Industries Board that there are large supplies of domestic and foreign wool in the United States and that the order providing for release of reasonable amounts was made pending a decision of the War Industries Board as to the final disposition of stocks. The Board is going over the situation from every angle and a decision may be expected in the next 30 to 60 days. The intention at present, it was stated, is to encourage manufacturers to make up samples for next season. The government continues taking what remains of the year's domestic clip. Whether there will be price control once the Board has decided upon future releases of wool for civilian purposes the wool section of the Board was not willing to indicate.

The knit goods packing schedule will not become effective January 1, and accordingly goods may be packed as at present. Beginning November 16, cotton yarns may be bought on a net weight basis if a recommendation of the American Cotton Manufacturers shall be adopted by the War Industries Board, which seems likely.

The following telegram to the National Hosiery and Underwear Manufacturers from the Conservation Division of the War Industries Board is self-explanatory:

> Due to changed conditions in your industry, regulations for packing of hosiery, underwear and knit goods issued by this Division to take effect January 1, 1919, will not be made effective.

PENNSYLVANIA DIVISION MEETS.

The Pennsylvania Division of the National Association of Hosiery and Underwear Manufacturers at a meeting in Reading on Saturday, November 23, took a firm stand on non-acceptance of order cancellation without just cause and made it known that even after government regulation of cotton yarn ceases, yarns will be bought only from spinners and merchants selling on a net weight basis.

The meeting, the largest ever held by this Division, adopted unanimously, among others, the following resolutions:

"Resolved, That we, the Pennsylvania Division of the National Association of Hosiery and Underwear Manufacturers, place ourselves on record as unequivocally and unfalteringly opposed to cancellation of orders not based on just and valid reasons. And be it further

"Resolved, That when buyers insist upon unjust and uncalled for cancellations all the facts in transactions involving attempted cancellation be referred to the executives of the National Association of Hosiery and Underwear Manufacturers, with instructions to investigate and proceed to arbitrate or institute legal procedings, as may be found most expedient.

"Resolved, That manufacturers who receive notice of cancellation report to the Association the names of merchants from whom such notices are received, the names of such merchants to be available to members of the Association for their information.

"Resolved, That the Association communicate with merchants who have been or may be reported to this meeting as attempting to cancel, advising of the action here taken.

NET WEIGHT YARNS.

or merchants not selling on net weight basis.

"Resolved, That we buy no cotton yarns from spinners

"Resolved, That the names of spinners and merchants offering cotton yarns on any basis other than net weight be reported to the National Association of Hosiery and Underwear Manufacturers, such names to be communicated to the members on their request.

The net weight yarn resolutions were adopted by a rising vote, and as in the matter of cancellations there was not one dissenting vote, every manufacturer present going on record.

STANDING OF GOVERNMENT CONTRACTS.

The following expression of the sentiment of the meeting on the final disposition of government contracts, was unanimously adopted:

"Whereas, The cessation of hostilities is likely to cause disturbances and losses in contracts which have been placed by the government for such commodities as are not essentially 'war materials,' and

"Whereas, The cancelling of such contracts might materially affect the steady employment of workers as well as cause a large financial loss to manufacturers, therefore be it

"Resolved, By the Pennsylvania Division of the National Association of Hosiery and Underwear Manufacturers in session in Reading, Pa., November 23, 1918, that a committee be appointed to advise with the Knit Goods Section of the War Industries Board that such action be taken by the government as would be the least detrimental to manu-

facturers of knit goods and their employees, and that present contracts be completed wherever possible, so that while engaged in their completion manufacturers may be enabled to divert their product to ordinary and civilian goods."

This preamble and resolution was reported by a committee appointed by the chairman of the meeting, Edward Blood, Sr., of John Blood & Brother, Inc., Philadelphia, and consisted of Walter W. Moyer, Ephrata; Charles E. Leippe, Reading Knitting Mills, and S. S. Miller, Reading.

Manufacturers present reported the names of a number of merchants from whom notice of cancellation had been received. One of these was reported in the Dry Goods Economist of November 16 as very enthusiastic over the trade outlook for the near future, and his canceling order therefor came as a surprise. Practically none of the cancellations were accepted by mills except in instances where there was doubt as to the financial responsibility of the merchant.

One merchant wanted to cancel because he had overbought. The absurdity of the attitude of some jobbers was illustrated in a case where a cancellation was offered because "we cannot wait any longer for the goods," whereas deliveries were not due at the time the notice was received. Another dealer sought to cancel an order against which deliveries are for January to April.

In contrast with the cancellation hysteria were the declarations of several members instancing a realization among some distributors that they need merchandise, the inference being that those who are troubled with the idea that they may cancel at will, simply are trying to depress prices for the present to enable them to purchase their requirements later at a loss to the mills and a continued large profit to dealers.

A distributor not in the Eastern section wrote several weeks ago to a Pennsylvania mill that its customers, in spite of the suggestions from salesmen that they take sparingly, bought heavily, the letter concluding with the positive statement, "We will have to buy more."

Another Pennsylvania manufacturer received an inquiry from a jobber, since the signing of the armistice, as to whether his mill could take care of an order for 50 cases of hosiery. The mill's reply was to the effect that no orders except for distant deliveries could be considered, that the plant was and for some time would be engaged to capacity, and that it was not desired to make further commitments.

"Sell net 10 days and not far in the future, and you will eliminate the most of your cancellation troubles," was the suggestion of an executive of a large mill which sells net 10 days exclusively.

"There is no reason for being scared," said a leading manufacturer of a wide range of lines. "But this is no time for backbones of lard. Rather is it a time for a stiffening of the spine. There will be no surplus of merchandise and prices cannot go down at this time. We owe it to ourselves to so conduct our affairs as to avert a panic, in the interest of both mill and distributor. If any of us have excess stocks of yarns perhaps there are others with not all they want. Therefor I would suggest that we help each other by relieving mills of surplus stocks, at the same time supplying those in want. This will help to steady the yarn situation and work toward unnecesary purchasing pending a settling down to something definite."

Endorsing the sentiments of this manufacturer, another said: "There is no difference in prices and supplies as between November 11 and November 23, the date of this meeting. Japan celebrated the signing of the armistice by announcing an advance of 50 yen per pound in the price of raw silk. To my knowledge manufacturers in some lines have in the last two weeks increased their price, under force of continuing high wage levels and raw material prices, to say nothing of maturing obligations for the Liberty Bonds which helped to win the war and provision which must be made for meeting heavy tax payments next year."

Still another manufacturer reported his mill so well supplied with business, with considerably more assured, that he is giving no attention whatever to export trade and will consider none until his mill has cleared the floor of domestic orders.

A jobber, not in the Eastern section, was reported having bought heavily within the last week. He had spent some days in New York conferring with selling interests and Southern, Northern and Western jobbers. On the day before he departed for his home city he said: "I have gone over matters very carefully and have listened to all sorts of advice from persons of many minds. The present does not look as bright to me as I would like to have it, but I did not come here to buy for the present. I feel that in a few months there will be very brisk buying. I just can't get rid of that notion, and have planned as I feel; that is, since I came here a week ago I have bought $115,000 worth of goods, and I have not the silghtest doubt I will be able to sell all at a real profit. That explains why I am giving you an order now at the highest prices for which I ever obligated myself."

The reasoning of this jobber—not one of the largest in his section, but known to practically every knitting mill in the United States—doubtless is along the lines which a great majority of the distributors would be disposed to follow but for their belief that by offering cancellations they may force prices to lower levels pending the return to activity and selling prices commensurate with mill costs, and again enjoy the advantage of having low priced goods in a strong and rising market. This view was held by possibly every manufacturer at the memorable meeting in Reading. Said one manufacturer:

"Cotton may go lower, but I would expect to see it sell at 40 cents before it drops to 20. Of course, yarns are too high, but to-day's prices will look low when cotton reaches the level to which I confidently believe it will go. There is too much hysteria. We seem to forget that nearly one-half of Europe, the countries of the Central Allies in particular, is almost naked and must be clothed just as surely as, we are told, those peoples must be fed. Cotton is the cheapest staple from which their clothing can be made and the United States is the only country where they can get it. Don't forget that. Cotton will go higher before the season is one-half over."

While admitting the attitude of an element in the jobbing trade antagonistic to stable business for the time, the meeting room rang with optimism throughout the enthusiastic session, and it was noteworthy that in safeguarding personal and mutual interest the manufacturers assembled were not unmindful of the fact, notwithstanding the war flame has been subdued, that there remains a philanthropic obligation, a resolution on the desirability of contributing liberally to the Christmas membership roll call of the American Red Cross being adopted.

Among the Knitting Mills.

Work has recently been commenced by the Rockland Hosiery Mills Company, Allegheny and Kensington avenues, Philadelphia, Pa., on the proposed alterations and improvements in its two-story factory building, to cost about $8,000. Harry Brockelhurst, 512 West Norris street, is the contractor.

The Norristown Hosiery Mills, Norristown, Pa., have recently been incorporated with a capital of $50,000 to operate a plant for the manufacture of hosiery. Albert M. Pigeon is treasurer.

plans prepared for alterations and improvements in its plant, to facilitate operations.

The Burton Hosiery Company, Allegheny Avenue and C Street, Philadelphia, Pa., is making rapid progress in the removal of the machinery at its plant to the works of the Cadet Hosiery Company, Second Street and Allegheny Avenue, concluding the consolidation plans of the two companies. New machinery for the manufacture of high-grade full-fashioned hosiery will be installed at the plant of the Burton company.

The Golden State Knitting Mills, Los Angeles, Cal., has filed notice of organization to operate a plant at 1542

Photo by courtesy of Anchor Post Iron Works.

THE OFFICE AND ONE CORNER OF THE MAIN MILL AT THE PERKINS HOSIERY MILLS, COLUMBUS, GA.

The Infant Wear Knitting Co., Malvern, Pa., is making rapid progress in the construction of a new two-story knitting mill, about 40 x 80 feet, to provide for increased capacity. The structure is estimated to cost $15,000.

The Betsey Ross Knitting Mills, Philadelphia, Pa., manufacturer of infants' hosiery, recently incorporated with a capital of $25,000, has filed notice of a change in its corporate name to the Ross, Smith, Hanlon Company. It is planned to install considerable new equipment, including presses, singeing machinery, labeling machines, loopers, etc., to increase operations.

The Nitram Manufacturing Company, 115 Long street, East Orange, N. J., manufacturer of knit goods, has had

Jefferson Street, West, for the manufacture of knit goods. W. O., W. F. and Otto Krause, Los Angeles, head of the company.

The S. & Z. Hosiery Company, Philadelphia, Pa., has recently filed articles of incorporation with a capital of $17,000 to operate a works for the manufacture of hosiery. John V. Slaughter is treasurer.

The Lancaster Mills, Clinton, Mass., have had plans prepared for the construction of a new eight-story storehouse at their plant, about 26 x 35 feet. Lockwood, Greene & Company, 60 Federal Street, Boston, are engineers for the company.

Henry Davis & Company, 253 Spadina Avenue, Toron-

to, Ontario, Can., are making rapid progress in the installation of a quantity of new flat machines for the production of sweaters. R. Midday will be in charge of the knitting operations.

The Mitland Mills, Inc., New York, have been incorporated with a capital of $51,200 to engage in the manufacture of hosiery, underwear, etc. Samuel E. Mitlitsky, Henry B. Lowenstein, New York; and Joseph Harris, Brooklyn, are the incorporators.

The Fort Schuyler Knitting Company, Utica, N. Y., manufacturer of women's ribbed cotton underwear, has recently filed notice of a decrease in its capitalization from $125,000 to $1,000.

A Safety First Switchboard.

The removable truck type safety first switchboard units are particularly adapted to plants where electrical distribution to various buildings is made from economically located distribution centers. The construction is such that extensions can be readily made or the units moved to other locations to meet changed or new conditions. All live parts are enclosed, and the opportunity for an operator to come in contact with the circuit is practically eliminated.

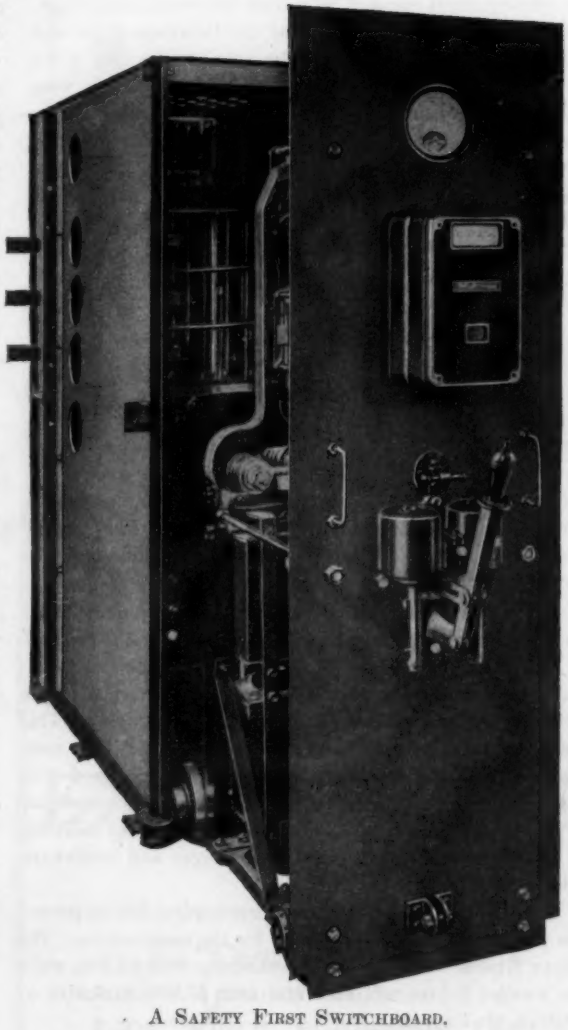
A spare removable unit can be used to reduce the time or shut down for inspection or repair. Busbars need not be killed, disconnecting switches need not be opened, leads and small wiring are not disturbed. The design of the units is in accord with the best engineering practice. The oil switches, busses and all live parts are in compartments. This tends to reduce fire hazards and limits disturbances to a single point.

The stationary member of the removable truck switchboard carries current and potential busses with their disconnecting switch studs, and barriers between the current studs to prevent accidental contact by anyone who enters the compartment. The rear end of the current disconnecting switch studs run to busses and incoming or outgoing leads; the potential buswires to small contact studs near the top of the compartment.

The removable truck is mounted on wheels. The fore part carries a sheet steel panel on which is mounted the instruments, meters, oil switches or other appliances usually mounted on the ordinary slate switchboard panel. The current transformers are mounted on steel brackets back of the instrument panel. The rear of the truck carries the movable parts of the disconnecting switches, the potential transformers and small wire accessories. To center the truck and to assist in placing it in or removing it from a compartment, rails fastened to the sides of the compartmens are furnished. The oil switches, instruments, meters, transformers, and all adjunct parts are removed, entirely from the installation by wheeling out the truck.

To remove or replace a switch unit, the oil switch must be open and therefore the load disconnected. This is provided for by an interlock attached to the oil switch operating toggle, which engages cast lugs on the walls of the stationary unit. With the oil switch closed it is impossible to remove or insert the truck. The value of this feature needs no discussion.

The panels are being regularly manufactured in a variety of styles and capacities. These vary from the smallest up to and including 1,200 amperes—and to operate at



A SAFETY FIRST SWITCHBOARD.

voltages up to 15,000. In the larger sizes the housings are usually of reinforced concrete and all capacities are designed for use with either solenoid or manually operated oil circuit breakers. These units are made by the General Electric Company.

Housing for the Marcus Hook Plant.

The Marcus Hook plant of the National Aniline & Chemical Co., Inc., has commenced construction on the village at Naaman's on the Delaware, and work now is rapidly progressing on the first hundred houses. The plant is located in the industrial section between Philadelphia and Wilmington and proper housing for the employees is not available in this locality. It is to A. B. Mitchell, plant manager, who is thoroughly familiar with the English housing idea, that credit is due for the start on this permanent village at Naaman's, which will provide the working men at the Marcus Hook plant with better homes and the Marcus Hook plant with better workmen.

Some time ago twenty-eight frame dwellings were completed as an experiment, and the demand for them was so great that it was definitely decided by the company that a village would be a valuable addition to this plant. A site

was selected about one-half mile from the works, on a beautiful piece of property overlooking the Delaware River and convenient to the Chester and Wilmington trolley line. After careful planning, streets were laid out and contracts were made for all utilities. Although the landscape plan is rectangular, the straight line appearance has been obviated somewhat by locating the houses at varying distances from the street. A space has been reserved for a park which forms the center of the development and a children's playground is to be provided.

The houses are of brick, varying in color, English in design. Low slate roofs, broken by gables and dormers, sometimes extending down over the porches, make them very attractive. These houses are as homelike as possible, being constructed in rows of six to eleven and of eight different types. Fifty-four of the houses are planned to have living-room, two bedrooms and bath, with combination dining-room and kitchen, while forty-six will have front hall, living-room, dining-room, kitchen and three bedrooms with a bath. All these houses have front porches. They are as large as is consistent with their purpose and conform to the present Government housing standards in every respect.

No expense has been spared to make these new houses complete in every detail, and the convenience and comfort of the tenant have been the chief considerations. A central heating plant will do away with the coal worries of the working-man and permit a substantial fuel economy. This system will also provide instantaneous hot water, both summer and winter, for every house and each is equipped with plumbing fixtures of the most modern type. The houses are to have electric lights while the kitchen equipment includes, in addition to enameled sinks, gas ranges and stationary tubs.

The United States Housing Corporation has approved the plans and granted permission for the construction. The larger type of house is costing something over $3,500, while the smaller houses will each cost over $3,000, exclusive of heating, grading, etc.

This whole operation is being financed entirely by the National Aniline and Chemical Company, Inc. The village in addition to the dwellings, is to have a general store cafeteria, and a dormitory building to accommodate fifty-four men. These buildings are designed in character with the houses.

Mr. F. W. VanLoon, of Philadelphia, is the contractor who is executing the work, having been selected in competition with four other contractors.

A Welding Instruction Book.

"Oxwelding and Cutting" is the title of a new manual of instruction recently issued by the Oxweld Acetylene Co. and containing 124 pages and numerous illustrations. This book is not intended to be an exhaustive treatise on the subject, but rather confines itself to actual problems that the operator sooner or later must master. It is a shop book pure and simple and contains practical information on the application of oxy-acetylene welding to brass, cast iron, and copper, as well as cutting various metal products, lead burning and many other details. It contains chapters upon the preparation of materials for welding, properties of metal, welding pipe, welding sheet metal tanks, and a variety of other processes simple and complex that may be encountered in the textile mill almost every day.

Oxy-acetylene welding is not a new process to the cotton manufacturer. More or less detailed descriptions of special jobs in special mills have been published in the pages of COTTON and in some instances the actual saving accomplished in the mill after months of use has been given. The book is not intended to introduce the use of oxy-acetylene welding, but rather to act as an aid and assistant to the man on the job where welding apparatus is already in place and being used daily. As no price is named in connection with this book, it is probable that a copy may be secured by mill officials actually interested on application to the Oxweld-Acetylene Company.

Newbert Color Company Expands.

The Newbert Color Company of Boston, well known to the trade as the New England and Southern selling agents for the Stamford Extract Manufacturing Company of New York, have taken over the Boston warehouse and become the New England and Southern selling agents for W. F. Sykes & Company, who have the American rights for the extensive line of aniline and alizarine colors, manufactured by St. Denis Dyestuff and Chemical Company of France.

The enviable position created in the trade by the Newbert Color Company, of which Walter E. Newbert is now the head, has made other well known manufacturers appoint them as selling agents, among them being, William Pettus Miller of Milford, Va., manufacturers of Sumac extract, the Yancy Bark Company with plants at Greenwood and Fredericksburg, Va., where they manufacture chestnut oak bark, and chestnut wood extracts, as well as the Warner Chemical Works who have recently erected a new plant for the manufacture of black iron liquor, at Warner, N. H. These agencies in addition to the New England and Southern agency for the Stamford Extract Manufacturing Company gives the Newbert Color Company a complete line of aniline and alizarine colors as well as the various wood extracts, while the taking over of the Sykes Boston headquarters will enable them to increase their warehouse and laboratory space and their force of chemists.

The growth of the Newbert Color Company during the past fifteen years is the best possible example of the result of what can be accomplished by energetic work and honorable dealings with the trade. Their southern representative, W. H. Bolen, has his headquarters at 81 Beecher street, Atlanta. He is well known among the southern mills, having spent his entire life in this section.

Seventy-eight students have registered in the four-year textile manufacturing course at the North Carolina Textile School. These are all day students. This textile school has a full equipment of machinery for instruction in cotton manufacturing, and is a department of the North Carolina College of Agriculture & Engineering.

"An industry that declines to hire its just proportion of cripples is not doing its duty, either by the cripple or by society. It is shirking its responsibility and throwing its burden on others."

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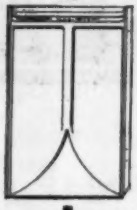

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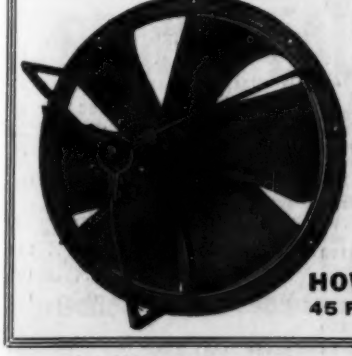

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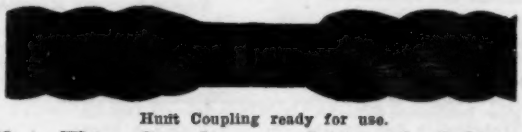

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Bandages, Tapes, Etc.
American Textile Banding Co.
Seydel Mfg. Co.

Bandage & Tape Machines.
Seydel Mfg. Co.

Banding Straps and Buckles.
Acme Steel Goods Co.
Signode System, Inc.

Baskets—Mill.
(See Boxes—Mill.)

Beam Dying Machines.
Cocker Mchy. & Foundry Co.

Beaming and Warping Mchry.
(See Warpers and Warping Machinery.)

Bearings.
Bound Brook Oilless Bearing Co.
Hyatt Roller Bearing Co.
New Departure Mfg. Co.
Transmission Ball Bearing Co.

Belting.
American Supply Co.
Goodrich Co., B. F.
Goodyear Tire & Rubber Co.
Graton & Knight Mfg. Co.

Belting—Canvas.
Goodrich Co., B. F.

Belting—Chain Link.
Link-Belt Company.
Morse Chain Co.

Belting—Rope.
(See Rope Transmission.)

Belt Conveyors.
Goodrich Co., B. F.
Link-Belt Company.
Morse Chain Co.

Belt Dressing.
Jos. Dixon Crucible Co.
Goodrich Co., B. F.
Goodyear Tire & Rubber Co.
Graton & Knight Mfg. Co.

Belt Lacing.
Goodrich Co., B. F.
Goodyear Tire & Rubber Co.
Graton & Knight Mfg. Co.

Belt Tighteners.
Link-Belt Company.

Bleacheries.
(See Dyers, Bleachers and Finishers.)

Bleaching Kiers.
Butterworth & Sons Co., H. W.
Philadelphia Drying Machy. Co.
Textile Finishing Machinery Co., The.

Bleaching Machinery.
(See Dyeing, Bleaching & Finishing Machinery.

Bleaching Materials.
Barrett Co.
Bosson & Lane.
Dicks-David Co., Inc.
Douglas Co.
Du Pont de Nemours & Co., E. I.
Electro Bleaching Gas Co.
Electric Smelting & Alum. Co.
Essex Aniline Works, Inc.
Grasselli Chemical Co.
Levinstein & Co., Inc.
Marden, Orth & Hastings Corp.
National Aniline & Chemical Co.
Newbert Color Co.
Newport Chemical Works, Inc.
Seydel Mfg. Co.
Smith Color Co., J. B.
Sonneborn Sons, Inc., L.
United Chemical Products Corp.
Wolf & Co., Jacques
Zavon, Inc.

Blowers and Blower Systems.
Carrier Eng. Corp.
General Electric Co.
Howard & Morse.
Leigh & Butler.
New York Blower Co.
Phila. Drying Machinery Co.
Western Electric Co.
Westinghouse Elec. & Mfg. Co.

Boards—Form.
Pearson, Jos. T.

Bobbins.
Draper Corporation.
Jordan Mfg. Co.
Leigh & Butler.
Shambow Shuttle Co.

Boilers.
Collins, J. D.
Lombard Iron Works & Supply Co.
Pittsburg-Des Moines Steel Co.
Schofield's Co., J. H.
Toomey, Frank.
Walsh & Weidner Boiler Co.

Boiler Feed Water Purification.
Graver Tank Works, Wm.
Scaife & Sons, Wm. B.

Boiler Fittings.
Lunkenheimer Co.

Boiler Graphite.
Jos. Dixon Crucible Co.

Box Strapping and Tie Buckles.
Acme Steel Goods Co.
Draper Corporation.
Signode System, Inc.

Boxes—Mill.
American Vulcanized Fibre Co.
Diamond State Fibre Co.
Fibre Specialty Co.
Keystone Fibre Co.
Lane & Bro.
Leatheroid Sales Co.
Rogers Fibre Co.
Standard Fibre Co.

Braids.
(See Tapes.)

Brokers (Cotton).
Beer, H. & B.

Brushes—Mill.
Felton Brush Co., D. D.
Felton, S. A. & Son Co.

Brushes—Commutator.
Dixon Crucible Co., Jos.
General Elec. Co.
Westinghouse Elec. & Mfg. Co.

Buckets & Pails—Mill.
American Vulcanized Fibre Co.
Cordley & Hayes.
Diamond Fibre Specialty Co.
Fibre Specialty Co.
Keystone Fibre Co.
Leatheroid Sales Co.
Rogers Fibre Co.
Standard Fibre Co.

Buckets—Elevator and Grab.
Link-Belt Company.

Buckles—Cotton Tie.
(See Box Strappings and Ties.)

Building Contractors.
(See Architects & Engineers.)

Buildings—Steel Portable.
Feaga Co., Gaylord W.
Lockwood, Greene & Co.

Building Material.
Anchor Post Iron Works.
Barrett Co., The
Detroit Graphite Co.
Dufur & Co.
Feaga Co., Gaylord W.
Lockwood, Greene & Co.
Nashville Hardwood Flooring Co.
Page Steel & Wire Co.
Pittsburg-Des Moines Steel Co.
Wadsworth, Howland & Co.

Burr Pickers.
Sargent's, C. G., Sons.
Smith & Furbush Machine Co.

Bushings.
Bound Brook Oil-less Bearing Co.
Southern Spindle & Flyer Co.

Calenders.
Textile Finishing Mchy. Co.

Calling System (Inter Telephone).
Collins, J. D.
Screw Machine Products Corp.
Western Electric Co.

Cans—Roving.
American Vulcanizing Fibre Co.
Cordley & Hayes.
Diamond State Fibre Co.
Fibre Specialty Co.
Keystone Fibre Co.
Leatheroid Sales Co.
Rogers Fibre Co.
Standard Fibre Co.

Cars and Trucks—Fibre.
(See Trucks.)

Carbonizing Machines.
Philadelphia Drying Machy. Co.
Phila. Textile Mchy. Co.
Sargents Sons & Co., C. G.
Textile Finishing Machinery Co., The

Carding Machinery.
Howard & Bullough.
Saco-Lowell Shops.
Smith & Furbush Mach. Co.
Southern Spindle & Flyer Co.

Card Clothing.
Howard & Bullough.
Leigh & Butler.
Saco-Lowell Shops.
Southern Spindle & Flyer Co.

Card Feeds.
Schofield, Wm. Co.
Smith & Furbush Mach. Co.

Card Grinding Machinery.
Leigh & Butler Co.
Smith & Furbush Mch. Co.

Carpet Machinery.
Butterworth, H. W. & Sons Co.
Crompton & Knowles Loom Wks.
Philadelphia Drying Machy. Co.
Phila. Textile Machy. Co.
Schofield, Wm. Co.
Smith & Furbush Mach. Co.
Textile Finishing Machy. Co., The

Carrier Aprons.
(See Aprons.)

Caustic Soda.
(See Bleaching Materials.)

Cement Machinery.
Allis-Chalmers Mfg. Co.

Cement and Brick Coating.
Detroit Graphite Co.
Dixon Crucible Co., Jos.
Wadsworth, Howland & Co.

Chain Drives.
(See Belting—Chain Link.)

Chain (Block, Bicycle, Auto Engine, Agricultural, Etc.)
Morse Chain Co.

Checks—Metal.
(See Stamps, Stencils, etc.)

Chemicals.
(See Dyestuffs and Chemicals.)

Chlorine Gas.
Electro Bleaching Gas Co.

Clocks—Hank, Etc.
(See Counters.)

Closets—Water.
(See Toilets.)

Cloth Cutters.
Firsching, J. A.
Wildman Mfg. Co.

Cloth Balers.
(See Baling Presses.)

Cloth Room Machinery.
Butterworth, H. W. & Sons Co.
Firsching, J. A.
Saco-Lowell Shops.
Textile Finishing Machinery Co.
Wildman Mg. Co.

Cloth Shrinking Machinery.
Reliance Machine Works.

Cloth Tubes.
(See Tubes—Cloth Protecting.)

Cloth Winders.
(See Winders.)

Clutches—Friction.
American Pulley Co.
Cresson-Morris Co.
Link-Belt Company.
Seeger-Walraven Co.
Transmission Ball Bearing Co.

Coal Driers—Centrifugal.
Link-Belt Company.

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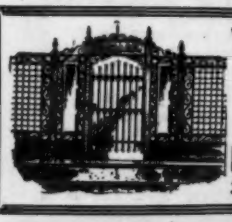

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BUYERS' INDEX—Continued.

Coal Handling Machinery.
Hunt Co., C. W.
Link-Belt Company.

Coal Tar Disinfectants.
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Cocks.
Lunkenheimer Co.

Colors.
(See Dyestuffs and Chemicals.)

Color Pails.
See Buckets (Mills).

Comb Aprons.
(See Aprons.)

Commission Merchants and Dealers.
(See Cotton Cloth Commission Merchants.)

Compresses (Cotton).
Bridge & Co., Ltd., David

Compression (High Density).
Bridge & Co., Ltd., David

Compressors—Air.
Allis-Chalmers Mfg. Co.
General Electric Co.
Seeger-Walraven Co.
Taylor Instrument Co.

Condensers.
Allis-Chalmers Mfg. Co.
Seeger-Walraven Co.

Cones and Cone Winding.
Universal Winding Co.

Connectors (Frankel Solderless).
Westinghouse Elec. & Mfg. Co.

Contractors—Building.
(See Architects and Engineers.)

Controlling Instruments.
Taylor Instrument Co.

Conveying Machinery.
American Pulley Co.
American Supply Co.
Collins, J. D.
Cresson-Morris Co.
Hunt Co., C. W.
Leigh & Butler.
Link-Belt Co.
Morse Chain Co.
Phila. Drying Machinery Co.
Phila. Textile Machy. Co.
Saco-Lowell Shops.
Schofield, Wm. Co.
Seeger-Walraven Co.
Smith & Furbush Mach. Co.

Coolers.
(See Humidifying Apparatus.)

Cooling Towers.
(See Tanks and Towers.)

Copper Stamps and Stencils.
(See Stamps, Stencils, Etc.)

Cordage Machinery.
Saco-Lowell Shops.
Smith & Furbush Mach. Co.
Textile Finishing Machinery Co. The

Cotton Cloth Commission Merchants and Dealers.
Armory Browne & Co.
Carver-Beaver Yarn Co., Inc.
Fawcett, Hughes.
Lauten Co., Prince
Southern Cotton Yarn Co., Inc.
Weimar Bros.
Woodward, Baldwin & Co.

Cotton Dealers and Brokers.
(See Brokers.)

Cotton Mill Machinery.
Barber-Colman Co.
Butterworth & Sons, H. W.
Cocker Mch. & Foundry Co.
Crompton & Knowles Loom Wks.
Delahunty Dyeing Machine Co.
Draper Corporation.
Firsching, J. A.
Fletcher Works.
Howard & Bullough.
Leigh & Butler.
Phila. Drying Mchy. Co.
Phila. Textile Machy. Co.
Sargent's Sons, Corp., C. G.
Saco-Lowell Shops.
Schaum & Uhlinger.
Schofield Co., Wm.
Smith & Furbush Mach. Co
Stafford Co.
Textile Finishing Machinery Co., The
Whitinsville Spinning Ring Co.

Cotton Tape Loom.
Fletcher Works.
Schaum & Uhlinger.

Cotton Yarn Mills.
(See Yarn Manufacturers.)

Coupling—Rope.
Hunt Co., C. W.

Counters—Revolution, Hank, Pick, Etc.
Veeder Mfg. Co.

Cranes—Locomotive.
Link-Belt Company.

Crayons.
American Crayon Co.
Dixon Crucible Co.

Crushing Machinery.
Allis-Chalmers Mfg. Co.

Cutters—Cloth.
(See Cloth Cutters.)

Cutters—Thread.
(See Thread Cutters.)

Dies—Steel.
(See Stamps, Stencils, etc.)

Disinfectants.
Barrett Co., The

Dobby Chains.
Crompton & Knowles Loom Wks.

Doffing Boxes—Mill.
(See Boxes—Mill.)

Door Mats—Steel.
Acme Steel Goods Co.

Draft Gauges and Thermometers.
Taylor Instrument Co.

Drawing Frames
Howard & Bullough.
Saco-Lowell Shops.

Drills—Electric.
(See Electrical Machinery.)

Drinking Fountains.
(See Fountains, Drinking.)

Dust Collectors.
(See Blowers and Blowing Systems.)

Dusting Machinery.
Schofield Co., Wm.
Smith & Furbush Mach. Co.

Dryers, Bleachers and Finishers.
Aberfoyle Mfg. Co.
Home Bleach & Dye Works.

Drying Machinery.
American Laundry Mchry. Co.
Butterworth, H. W. & Sons Co.
Cocker Mch. & Foundry Co.
Sargent's Sons Corp., C. G.
Textile Finishing Machinery Co., The

Dyeing, Bleaching, Finishing and Printing Machinery.
American Laundry Mchry. Co.
Butterworth & Son Co., H. W.
Cocker Mch. & Foundry Co.
Delahunty Dyeing Machine Co.
Electro Bleaching Gas Co.
Firsching, J. A.
Fletcher Works.
Leigh & Butler.
Phila. Drying Machinery Co.
Phila. Textile Machy. Co.
Reliance Machine Works.
Schaum & Uhlinger.
Textile Finishing Machinery Co., The
Tolhurst Machine Works.

Dye Sticks.
Phila. Drying Machinery Co.

Dyestuffs and Chemicals.
Aberfoyle Mfg. Co.
Arabol Mfg. Co.
Barrett Co.
Bayer Co.
Bosson & Lane.
Dicks, David Co., Inc.
Douglas Co.
Du Pont de Nemours & Co., E. I.
Electro Bleaching Gas Co.
Essex Aniline Works, Inc.
Grasselli Chemical Co.
Holland Aniline Co.
Levinstein & Co., Inc.
Lewis, John D.
Marden, Orth & Hastings Corp.
Metz & Co., H. A.
National Aniline & Chemical Co.
Newbert Color Co.
Newport Chemical Works, Inc.
Seydel Mfg. Co.
Sherwin-Williams Co.
Smith Color Co., J. R.
Sonneborn Sons, Inc., L.
United Chemical Products Corp.
Wolf & Co., Jacques
Zavon, Inc.

Electric Dynamos and Motors.
(See Motors and Generators.)

Electric Fans.
(See Fans—Electric.)

Electric Lamps.
(See Lamps.)

Electrical Machinery and Supplies.
Allis-Chalmers Mfg. Co.
Carter Electric Co.
Chicago Fuse Mfg. Co.
Economy Fuse & Mfg. Co.
Federal Sign System (Electric)
General Electric Co.
Lincoln Elec. Co.
Seeger-Walraven Co.
Snow & Co., E. W.
Walsh & Weidner Boiler Co.
Western Electric Co.
Westinghouse Electric & Mfg. Co.

Electric Signs.
Federal Sign System (Electric).

Electric Sirens.
Federal Sign System (Electric).

Electric Trucks—Inter-Transportation.
(See Trucks—Electric.)

Elevators.
Collins, J. D.
Hunt Co., C. W.
Link-Belt Company.
Seeger-Walraven Co.

Enamel—Mill White.
(See Paint—Mill White.)

Engineers (Mill).
(See Architects.)

Engines—Oil, Gas and Gasoline.
Seeger-Walraven Co.

Engines—Steam.
Allis-Chalmers Mfg. Co.
Collins, J. D.
Lombard Iron Works & Supply Co.
Schofield's Sons Co., J. S.
Seeger-Walraven Co.
Toomey, Frank.
Walsh & Weidner Boiler Co.

Engine Appliances—Oil and Steam.
Lunkenheimer Co.

Engine Room Supplies.
Goodyear Tire & Rubber Co.
Lunkenheimer Co.
Graton & Knight Mfg. Co.

Engraved Cards.
Wiggins Co., John B.

Extractors—Hydro.
American Laundry Mchry Co.
Fletcher Works.
Schaum & Uhlinger.
Tolhurst Machine Works.

Fans—Electric.
Allis-Chalmers Mfg. Co.
Carter Electric Co.
General Electric Co.
Howard & Morse.
Lincoln Electric Co.
Western Electric Co.
Westinghouse Elec. & Mfg Co.

Fans—Conveying, Power and Exhaust.
(See Blowers and Blowing Systems.)

Feed Water Purifiers.
(See Water Softeners.)

Felting Machinery.
Smith & Furbush Mach. Co.

Fence—Steel and Iron.
Anchor Post Iron Works.
Cyclone Fence Co.
Page Steel & Wire Co.

Fibre Products.
American Vulcanized Fibre Co.
Cordley & Hayes.
Fibre Specialty Mfg. Co.
Keystone Fibre Co.
Lane & Bro., W. T.
Leatheroid Sales Co.
Macrodi Fibre Co.
Rogers Fibre Co.
Standard Fibre Co.

Filters—Water.
(See Water Softening.)

Finishing.
(See Dyers, Bleachers and Finishers.)

Finishing and Sizing Materials.
Bosson & Lane.
Corn Products Refining Co.
Dicks, David Co., Inc.
Douglas Co.
Du Pont de Nemours & Co., E. I.
Essex Aniline Works, Inc.
Electric Smelting & Alum. Co
Grasselli Chemical Co.
Levinstein & Co., Inc.
Marden, Orth & Hastings Corp
Newport Chemical Wor'ı, Inc.
Metz & Co., H. A.
Newbert Color Co.
National Aniline & Chemical Co
Seydel Mfg. Co
Sherwin-Williams Co.
Smith Color Co., J. R.
Sonneborn Sons, Inc., L.
United Chemical Products Corp
Warren Soap Mfg. Co.
Wolf & Co., Jacques
Zavon, Inc.

Fire Buckets.
Cordley & Hayes.

Fire Escapes (Spiral).
Collins, J. D.

Fire Extinguishers.
Pyrene Mfg. Co.

Fire Hose.
(See Hose—Fire.)

Fire Protecting Paint.
(See Paint—Fireproof.)

First Aid Room Equipment.
(See Hospital Equipment.)

Flooring (Hardwood).
Nashville Hardwood Flooring Co.

Fluted Rolls.
Howard & Bullough.
Saco-Lowell Shops.
Schofield's Sons Co., J. S.
Smith & Furbush Machine Co
Southern Spindle & Flyer Co.

Flyers.
Howard & Bullough.
Leigh & Butler.
Saco-Lowell Shops.
Southern Spindle & Flyer Co.

Fountains (Drinking).
Cordley & Hayes.

Friction Clutches.
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Fuses.
(See Elec. Mchy. and Supplies.)

Garnett Machines.
Leigh & Butler.
Smith & Furbush Mach. Co.

Gas Engines.
(See Engines—Gas.)

Gaskets
Diamond State Fibre Co.
Goodyear Tire & Rubber Co.
Graton & Knight Mfg. Co.

Gauge Cocks.
Lunkenheimer Co.

Gauges—Draft.
Taylor Instrument Co.

Gauges—Mercury Column Vacuum.
Taylor Instrument Co.

Gauges—Oil.
Lunkenheimer Co.

Gauges—Water.
Lunkenheimer Co.

Gears—Silent.
Diamond State Fibre Co.
General Electric Co.
Link-Belt Co.
Morse Chain Co.

Gear Cutters.
Cresson-Morris Co.
Whiton Mch. Co., D. E.

Generators—Electric.
(See Motors and Generators.)

Graphite—Products.
Dixon Crucible Co. Jos.

Grates—Shaking.
Collins, J. D.
Lombard Fdy. & Mch. Co.

Grease.
(See Lubricants.)

Grease Cups.
(See Lubricators.)

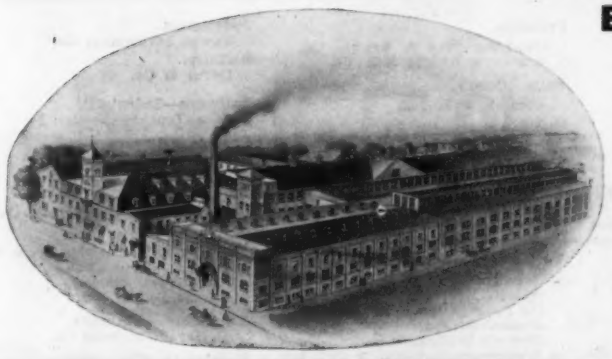
Grinders—Card, Cylinder Roll, Napper and Garnett.
(See Card Grinding Machinery.)

Gums.
(See Finishing and Sizing Materials.)

Hangers.
(See Shafting and Hangers.)

Hardwood.
Nashville Hardwood Flooring Co.

Harness—Loom.
American Supply Co.
Crompton & Knowles Loom Wks.
Emmons Loom Harness Co.
Garland Mfg. Co.
Electro Bleaching Gas Co.



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Heating and Ventilating Apparatus.
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Crompton & Knowles Loom Wks.

Hoists.
Link-Belt Company.
Morse Chain Co.
Seeger-Walraven Co.

Hose—Fire.
Goodrich Co., B. F.
Goodyear Tire & Rubber Co.

Hosiery Finishing Boards.
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Hosiery Yarns.
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Hospital Equipment.
Thomas Co., P. H.

Hotels.
Marquette.
Martinique.
Sinton.

Humidifying Apparatus.
Carrier Eng. Corp.
New York Blower Co.

Hydraulic Turbines.
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Hydro Extractors.
(See Extractors.)

Hygrometers.
Taylor Instrument Co.

Indicating and Recording Instruments.
Taylor Instrument Co.

Indigo.
(See Dyestuffs and Chemicals.)

Injectors.
Lunkenheimer Co.

Ink—Stencil and Marking.
Atlanta Stamp & Stencil Wks
Bradley Mfg. Co., A. J.

Iron Work—Ornamental.
Anchor Post Iron Works.
Cyclone Fence Co.
Dufur & Co.
Howard & Morse.
Page Steel & Wire Co.

Jacquards.
Crompton & Knowles Loom Wks.

Jute Bagging Machines.
Smith & Furbush Mach. Co.

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Kettles—Soda.
Lombard Iron Works & Sup. Co.

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Knitting Machinery.
Boss Knitting Mach. Works.
Brinton Co., H.
General Machine Works.
Hemphill Mfg. Co.
Nye & Tredick Co.
Scott & Williams.
Smith & Furbush Mach. Co.
Wildman Mfg. Co.

Lamps—Incandescent and Arc.
Boston Economy Lamp Div.
Carter Electric Co.
General Electric Co.
Western Electric Co.
Westinghouse Lamp Co.

Lappers.
Saco-Lowell Shops.
Smith & Furbush Mach. Co.

Laundry Machinery.
American Laundry Mchry. Co.
Fletcher Works.
Schaum & Uhlinger.
Tolhurst Machine Works.

Leather Belting.
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Leather Specialties.
American Supply Co.
Graton & Knight Mfg. Co.

Linen Yarns.
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Link Belting.
(See Belting—Link.)

Liquid Chlorine.
(See Chlorine.)

Loaders—Wagon and Trucks.
Link-Belt Company.

Logwood Extract.
(See Dyestuffs and Chemicals.)

Looms.
Crompton & Knowles Loom Wks.
Draper Corporation.
Fletcher Works.
Saco-Lowell Shops.
Schaum & Uhlinger.
Schofield, Wm. & Co.
Stafford Co., The

Lumber.
Nashville Hardwood Flooring Co.

Lubricants.
Dixon, Jos., Crucible Co.
Kellogg & Co., E. H.
N. Y. & N. J. Lubricant Co.
Swan & Finch Co.

Lubricators.
Lunkenheimer Co.
N. Y. & N. J. Lubricant Co.

Lug Straps.
(See Straps—Lug.)

Marking Pots, Stencils, Inks, Etc.
Atlanta Stamp & Stencil Wks.
Bradley Mfg. Co., A. J.

Mercerized Yarns.
(See Yarns Mercerized.)

Mercerizers.
Aberfoyle Mfg. Co.
Home Bleach & Dye Works.

Mercerizing Machinery.
Butterworth, H. W. & Sons Co.
Textile Finishing Machinery Co.

Metal Ceilings, Etc.
Lupton's Sons Co., David

Metal Workers—Sheet.
Lombard Iron Works & Supply Co.
Howard & Morse.
Page Steel & Wire Co.
Pittsburg-Des Moines Steel Co.

Meters—Flow, Air, Gas, Electric, Steam, Etc.
Allis-Chalmers Mfg. Co.
Carter Electric Co.
General Electric Co.
Lincoln Electric Co.
Taylor Instrument Co.
Western Electric Co.
Westinghouse Elec. & Mfg. Co.

Meters (Revolution).
Taylor Instrument Co.

Mill Baskets and Boxes.
(See Boxes—Mill.)

Mill Engineer.
(See Architects and Engineers.)

Mill White Paint.
(See Paint—Mill White.)

Motors and Generators—Electric.
Allis-Chalmers Mfg. Co.
Carter Electric Co.
General Electric Co.
Lincoln Electric Co.
Seeger-Walraven Co.
Western Electric Co.
Westinghouse Elec. & Mfg. Co.

Mule Stands
Transmission Ball Bearing Co.

Napping Machinery.
Leigh & Butler.

Oils—Finishing.
(See Finishing and Sizing Materials.)

Oils—Lubricating.
(See Lubricants.)

Oil Cups.
(See Lubricators.)

Oil Paper.
Bradley Mfg. Co., A. J.

Oiling Devices.
(See Lubricators.)

Openers for Cotton, Wool, Waste Etc.
Leigh & Butler.
Saco-Lowell Shops.
Schofield Co., Wm.
Smith & Furbush Mach. Co.

Oxidizing Machinery.
Phila. Drying Machinery Co.

Oxygen.
Bird Wilcox Co.
Commercial Acetylene Supply
Oxweld Acetylene Co.

Packings.
Goodyear Tire & Rubber Co.
Graton & Knight Mfg. Co.

Pails (Color).
Cordley & Hayes.

Paint.
Barrett Co., The
Chaffee, Thos. K.
Detroit Graphite Co.
Du Pont de Nemours & Co., E. I.
Peaslee-Gaulbert Co.
Sherwin-Williams Co.
Wadsworth-Howland & Co., Inc.

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Barrett Co.
Detroit Graphite Co.
Du Pont de Nemours & Co., E. I.
Peaslee-Gaulbert Co.
Sherwin-Williams Co.
Wadsworth-Howland & Co., Inc.

Paint—Mill White.
Chaffee, Thos. K.
Detroit Graphite Co.
Du Pont de Nemours & Co., E. I.
Peaslee-Gaulbert Co.
Sherwin-Williams Co.
Wadsworth-Howland & Co., Inc.

Paper.
Odell Mfg. Co.

Paper—Oil.
Bradley Mfg. Co., A. J.

Perforated Metal.
(See Screens and Sieves.)

Picking Machinery.
Howard & Bullough, Am. Machine Co.
Saco-Lowell Shops.
Schofield Co., Wm.
Smith & Furbush Mach. Co.

Pickers—Curled Hair.
Schofield, Wm. Co.
Smith & Furbush Mach. Co.

Pickers—Leather.
Garland Mfg. Co.

Picker Sticks.
Garland Mfg. Co.

Pipe Fittings.
Lunkenheimer Co.

Pipe Threading & Cutting Machines.
Seeger-Walraven Co.

Playground Equipment.
Hill-Standard Co.

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Allis-Chalmers Mfg. Co.
American Pulley Co.
American Supply Co.
Bound Brook Oil-less Bearing Co.
Cresson-Morris Co.
General Electric Co.
Goodrich Co., B. F.
Goodyear Tire & Rubber Co.
Graton & Knight Mfg. Co.
Hyatt Roller Bearing Co.
Link-Belt Company.
Morse Chain Co.
New Departure Mfg. Co.
Seeger-Walraven Co.
Transmission Ball Bearing Co.
Westinghouse Elec. & Mfg. Co.

Press Papers.
Diamond State Fibre Co.

Presses.
American Laundry Machinery Co.
Bridge & Co., Ltd., David
Butterworth & Sons Co., H. W.
Economy Baler Co.
Hercules Mfg. Co.
Phila. Drying Machine Co.
Reliance Machine Works.
Seeger-Walraven Co.
Smith & Furbush Mch. Co.
Textile Finishing Machinery Co. The

Pulleys.
American Pulley Co.
Cresson-Morris Co.
Link-Belt Company.
Seeger-Walraven Co.
Transmission Ball Bearing Co.

Pulley Covering.
Goodyear Tire & Rubber Co.

Pumps.
Allis-Chalmers Mfg. Co.
Collins, J. D.
Seeger-Walraven Co.
Textile Finishing Machinery Co.
Walsh & Weidner Boiler Co. The
Toomey, Frank.
Westinghouse Elec. & Mfg. Co.

Pump Valves.
See Valve Discs.

Pyrometers.
Taylor Instrument Co.

Railings.
Dufur & Co.

Railways—Industrial.
(See Trucks—Electric.)

Recording Instruments.
Taylor Instrument Co.

Reeds.
American Supply Co.
Emmons Loom Harness Co.

Reels.
Crompton & Knowles Loom Wks.
Draper Corporation.
Saco-Lowell Shops.
Schofield Co., Wm.

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Taylor Instrument Co.

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Taylor Instrument Co.

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Pittsburg-Des Moines Steel Co.

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General Machine Works.
Southern Spindle & Flyer Co.

Rib Top Cutters.
General Machine Works.
Wildman Mfg. Co.

Ring Travelers—Steel and Bronze.
Whitinsville Spinning Ring Co

Rings—Spinning.
(See Spinning Rings.)

Rocker Shaft Bearings.
(See Bearings.)

Rolls—Steel.
Southern Spindle & Flyer Co.

Roofing.
Barrett Co., The
Cortright Metal Roofing Co.
Detroit Graphite Co.

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Barrett Co.
Detroit Graphite Co.
Du Pont de Nemours & Co., E. I
Peaslee-Gaulbert Co.
Sherwin-Williams Co.
Wadsworth, Howland & Co., Inc.

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American Pulley Co.
Cresson-Morris Co.
Hunt Co., C. W., Inc.
Link-Belt Company.

Roving Cans & Trucks.
(See Cans—Roving.)

Roving Machinery.
Howard & Bullough.
Saco-Lowell Shops,

Rubber Stamps.
(See Stamps, Stencils, Etc.)

Rubber Goods.
Goodrich Co., B. F.
Goodyear Tire & Rubber Co.

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Bound Brook Oil-less Bearing Co.

Sash-Window—Steel.
Lupton's Sons Co., David.

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American Kron Scale Co.

Scale Preventer (Boiler).
See Boiler Feed Water Purification.

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Erdle Perforating Co.
Link-Belt Company.

Sewing Machines.
Merrow Machine Co., The
Textile Finishing Mchy. Co.
Willcox & Gibbs Sewing Mach. Co.

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Cresson-Morris Co.
Link-Belt Co.
Seeger-Walraven Co.
Transmission Ball Bearing Co.

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Lupton's Sons Co., David.

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Barrett Co.

Shingles—Metal.
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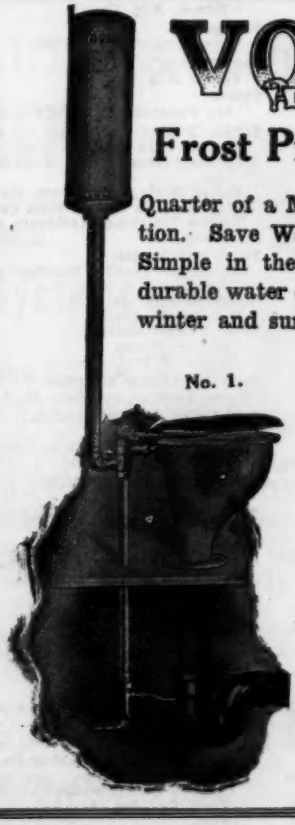

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- **Malleable seat castings will not break.**
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Draper Corporation.
Shambow Shuttle Co.

Sirens (Electric).
Federal Sign System (Electric).

Singeing Machinery.
Butterworth & Sons Co., H. W.
Phila Drying Machine Co.
Textile Finishing Machinery Co. The

Size Kettles.
Butterworth, H. W. & Sons Co.
Howard & Bullough, American Machine Co.
Lombard Iron Works & Sup. Co.
Saco-Lowell Shops.
Textile Finishing Machinery Co., The

Sizing and Finishing Compounds.
(See Finishing & Sizing Materials.)

Skewers.
Jordan Mfg. Co.

Skylights—Steel.
Lupton's Sons, Co., David.

Slashers.
Butterworth & Sons Co., H. W.
Cocker Mch. & Foundry Co.
Howard & Bullough.
Saco-Lowell Shops.
Textile Finishing Machinery Co. The

Slate Asphalt Roofing.
Barrett Co.

Slubbers.
Howard & Bullough.
Saco-Lowell Shops.

Soap—Textile.
Douglas Co.
Dicks, David Co., Inc.
Du Pont de Nemours & Co., E. I.
Electric Smelting & Alum. Co.
Essex Aniline Co.
Grasselli Chemical Co.
Levinstein & Co., Inc.
Marden, Orth & Hastings Corp.
Newbert Color Co.
Newport Chemical Works.
Sonneborn Sons, Inc., L.
United Chemical Products Corp.
Warren Soap & Mfg. Co.
Wolf & Co., Jacques.

Softeners—Cotton.
Arabol Mfg. Co.
Bosson & Lane
Dicks, David Co., Inc.
Douglas Co.
Du Pont de Nemours & Co., E. I.
Essex Aniline Co.
Grasselli Chemical Co.
Levinstein & Co., Inc.
Marden, Orth & Hastings Corp.
Newbert Color Co.
Newport Chemical Works.
Seydel Mfg Co.
Smith Color Co., J. R.
Sonneborn Sons, Inc., L.
United Chemical Products Corp.
Wolf & Co., Jacques.
Zavon, Inc.

Softeners—Water.
(See Water Softeners.)

Solderless Connectors (Frankel).
Westinghouse Elec. & Mfg. Co.

Solvents.
(See Finishing.)

Spindles.
Draper Corporation.
Saco-Lowell Shops.
Southern Spindle & Flyer Co.

Spindles—Ball Bearing.
Draper Corporation.
Howard & Bullough.
New Departure Mfg. Co.
Saco-Lowell Shops.
Smith & Furbush Machine Co.

Spinners.
Arlington Cotton Mills.
Arrow Mills, Inc.
Gray Mfg. Co.
Myrtle Mills, Inc.
Parkdale Mills, Inc.

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American Machine Co., H. & B.
Crompton & Knowles Loom Wks.
Draper Corporation.
Fletcher Works.
Howard & Bullough.
Saco-Lowell Shops.
Schaum & Uhlinger.
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Howard & Bullough.
Whitinsville Spinning Ring Co.

Spinning Tape Specialists.
American Textile Banding Co. Inc.
Barber Mfg. Co.

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Cordley & Hayes.

Spooling Machinery.
Draper Corporation.
Saco-Lowell Shops.
Smith & Furbush Machine Co.

Sprinkler Tanks.
(See Tanks, Towers, Etc.)

Sprockets.
Link-Belt Company.
Morse Chain Co.

Stamps, Stencils and Stencil Machines.
Atlanta Stamp & Stencil Works.
Bradley Mfg. Co., A. J.

Stand Pipes.
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Starch & Gums.
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Steam Engines.
(See Engines—Steam.)

Steam Hose.
(See Hose—Steam.)

Steam Pumps.
(See Pumps—Steam.)

Steam Traps.
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Steel Doors, Windows, Partition, Etc.
Pittsburg-Des Moines Steel Co.
Lupton's Sons Co., David.

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Steel—Structural.
Feaga Co., Gaylord W.
Lockwood, Greene & Co.
Pittsburg Des Moines Steel Co.
Sirrine, J. E.

Stencils & Stencil Papers.
(See Stamps and Stencils.)

Stencil Brushes.
(See Marking Pots and Brushes.)

Stencil Machines.
(See Stamps and Stencils.)

Stop Motion.
Crompton & Knowles Loom Wks.
Draper Corporation.
Wildman Mfg. Co.

Strapping.
(See Leather Specialties.)

Tachometers.
Veeder Mfg. Co.

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Tanks, Towers and Tubs.
Graver Tank Works, Wm.
Lombard Iron Works & Supply Co.
Phila. Drying Machinery Co.
Pittsburg-Des Moines Steel Co.
Textile Finishing Machinery Co. The

Tapes and Braids.
American Textile Banding Co. Inc.
Barber Mfg. Co.
Weimar Brothers.

Tape Looms—Cotton.
Fletcher Works.
Schaum & Uhlinger.

Tape Machining Machines.
(See Bandage and Tape Mach.)

Telephones (Calling System).
Collins, J. D.
Screw Machine Products Corp.
Western Electric Co.

Temperature Controllers.
Carrier Eng. Corp.

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Draper Corporation.

Tenters.
Butterworth & Sons Co., The.
Textile Finishing Mach. Co.

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Taylor Instrument Co.

Thin Place Preventers.
Draper Corporation.

Thread Guides.
Palmer Co., The I. E.

Toiring Machines.
Collins, J. D.

Tires—Auto and Truck.
Goodrich Co., B. F.
Goodyear Tire & Rubber Co.

Toilets.
Cement Products Co.
Vogel Co., Jos. A.

Towers.
(See Tanks and Towers.)

Transmission—Power.
(See Power Transmission Machinery.)

Traps—Return Steam.
Morehead Mfg. Co.

Trucks—Auto.
Federal Motor Truck Co.
White Co., The

Trucks—Electric—Inter.
Cowan Truck Co.
Hunt Co., C. W.

Trucks—Elevating—Inter.
Cowan Truck Co.
Hunt Co., C. W.

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Leatheroid Sales Co.
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Turbines—Steam.
Allis-Chalmers Mfg. Co.
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Twisting Machinery.
Draper Corporation.
Howard & Bullough.
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Smith & Furbush Mach. Co.

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Vogel Co., Jos. A.

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Valves—Gate.
Lunkenheimer Co.

Valves—Non-return Stop.
Lunkenheimer Co.

Valves—Pop-Safety.
Lunkenheimer Co.

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Barrett Co.
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Carrier Eng. Corp.
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Saco-Lowell Shops.
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Washers (Leather)
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Goodyear Tire & Rubber Co.

Washers, Wooden, Oil-less.
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Waste Balers.
(See Baling Presses.)

Waste Machinery—Cotton.
Howard & Bullough.
Leigh & Butler.
Saco-Lowell Shops.
Sargent's Sons Co., C. G.
Schofield Co., Wm.
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Water Columns.
Lunkenheimer Co.

Water Coolers—Drinking.
Cordley & Hayes.

Water Cooling Ponds.
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Graver Tank Works, Wm.
Scaife & Sons Co., Wm. B

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Waterproofing Machinery.
Butterworth, H. W. & Sons Co.
Textile Finishing Machinery Co. The

Weaving.
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Lincoln Electric Co.
Westinghouse Elec. & Mfg. Co.

Welding Apparatus—Oxy-acetylene.
Bird-Wilcox Co., Inc.
Commercial Acetylene Supply Co.
Oxweld Acetylene Co.

Welding—Job.
Bird-Wilcox Co., Inc.
Oxweld Acetylene Co.

Welfare Equipment.
Hill-Standard Co.
Thomas Co., F. H.

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American Vulcanized Fibre Co.
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Macrodi Fibre Co.
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Wheel Puller.
Greb Co., Inc.

Whistles (Electric).
Federal Sign System (Electric).

Whistles—Steam.
Lunkenheimer Co.

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Home Bleach & Dye Works.
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Saco-Lowell Shops.
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Stafford Co., The

Windows—Steel.
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Wire Railings.
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Wiring—Electrical.
(See Electrical Contractors.)

Wood.
(See Lumber.)

Wood Preserver.
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Detroit Graphite Co.
Du Pont de Nemours & Co., E. I.
Peaslee-Gaulbert Co.
Sherwin-Williams Co.
Wadsworth, Howland & Co., Inc.

Wood Pulleys.
(See Pulleys.)

Woolen Machinery.
Butterworth, H. W. & Sons Co.
Crompton & Knowles Loom Wks.
Draper Corporation.
Leigh & Butler.
Schofield Co., Wm.
Phila. Drying Machinery Co.
Phila. Textile Machinery Co.
Sargent's Sons Corp., C. G.
Smith & Furbush Mach. Co.
Stafford Co., The
Textile Finishing Machinery Co.

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(See Paper.)

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Arrow Mills, Inc.
Aberfoyle Mfg. Co.
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Makes the Strongest, Smoothest Warps; the Best Cloth and Least Seconds.

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High Pressure Boilers built to Insurance Specifications. Rivet Holes Punched or Drilled. Pumps, Injectors, Pipe Mill Supplies, Castings.

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CYLINDER OIL

TRY A BARREL FOR 60 DAYS

If it does not come up to your standard of what a good lubricating oil should be, and you consider that it is not worth our price—put your own value on it and remit on that basis. Isn't that a fair proposition? "A. C. C." will pare down your oil and cylinder repair bills—save your piston packing, too. It has been doing this for forty years, it will effect such a saving now—just give "A. C. C." a chance.

May we go into the subject with you?

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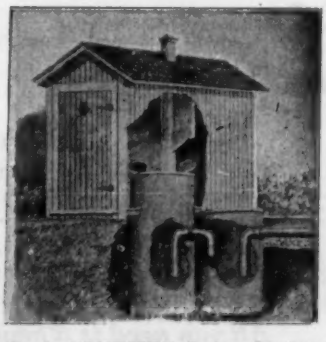
No. 11 "SANISEP" System for use with running water.

"SANISEP"
(Trade Mark Reg.)
PORTABLE
Sewerage Systems



No. 2. "SANISEP" System for two families. No running water required.

The old fashion out house is the cause of most of the diseases in a mill village. WHY NOT PROTECT the health of your self and employees by using the "SANISEP" System of sewerage disposal.

It operates with or without running water. Reinforced water-proofed containers. No scavengers and no chemicals required. Fly proof and odorless.

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WILMINGTON, N. C.

When Distress Calls the Red Cross Answers "HERE!"

NOW the Red Cross calls! The annual Christmas Roll Call of members will echo throughout the land the week of December 16th to 23rd.

Membership in the Red Cross now is more than duty—it is an honored privilege, and an evidence of loyalty. When that Roll is called, your conscience, your sense of right and justice, your love of country and your devotion to the highest ideals of unselfish service all suggest that you answer "HERE!"

All you need is a heart and a dollar

These entitle you to membership for one year.

When you wear your button, signifying that you are a member, you will not be asked to join again this year—it means that you have answered the Roll Call.

Join—be a Christmas member—but just join once.

Our soldiers and sailors look to the Red Cross for comforts. They have never been disappointed.

The Red Cross looks to you for the moral support of your membership. Answer "HERE!" when the Roll is called.

Join the Red Cross

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United States Gov't Comm. on Public Information

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Fly Your Flag

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Wanted—Salesmen

Salesmen calling on the textile mills, and interested in new lines of machinery, paints, building supplies or chemicals, either as a side line or exclusively will find it profitable to write, giving experience, territory covered and other details. Correspondence strictly confidential. All letters acknowledged. Cotton, 1021 Grant Building, Atlanta, Ga.

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FOR SALE

32 Deliveries Drawing
2000 Spindles, 7 x 3½" Fly Frames
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Six Hundred 40" plain Mason Looms. Can be seen running.
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For Sale

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The following tools are from a private set and have seen little, and in some instances, no usage. The prices shown are the regular list price which will be discounted 33 per cent on single tools or a special price made on the whole outfit. Tools will be shipped by express C. O. D. with privilege of examination:

1 height gauge attachment, $1.75.

1—Brown & Sharpe Vernier depth gauge, No. 600, $12.00.

1—8" Brown & Sharpe Vernier height gauge No. 585, $31.75.

1—10" Brown & Sharpe Vernier caliper No. 570, $25.75.

1 Brown & Sharpe inside micrometer caliper No. 254, 1" to 2", $7.15.

All these tools are in cases except the height gauge attachment.

Apply to Box 17, care Southern Engineer.

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ENGINES

Corliss Automatic and Slide Valve

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Pumps, Hoisting Engines, Gas and Gasoline Engines.

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Lathes, Planers, Shapers, Drill Presses, etc.

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AND SUPPLIES OF ALL KINDS

FRANK TOOMEY, Inc.,
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Have You?

Have you any proposition to put before the executives in the textile mills of the South? Anything to sell or buy that they may want or have? Do you want a better position or do you want a good man to fill a position?

Whatever your message, this "Classified Opportunities section of COTTON is the logical place for the announcement of your requirements.

It's the meeting place for Employer and Employee, and a good salesman in print for anything you want to dispose of.

A little ad. won't cost much. Try it for a month or so.

ADVERTISING is an economy and cuts the cost of selling, making lower prices or better goods possible without sacrifice of the producers' profits.

STENCILS FOR COTTON SHIPPERS, COTTON MILLS MERCHANTS & MANUFACTURERS - ALSO BRUSHES, INK, MARKING PTS
RUBBER STAMPS NOTARIAL CORPORATION SEALS
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P O BOX 43 OLDEST STENCIL AND STAMP HOUSE IN GEORGIA ATLANTA GA

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Southern Cotton Yarn Co., Inc.

1 Madison Avenue, New York City

SELLING AGENTS FOR

SOUTHERN MILLS

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4's TO 120's SINGLE AND PLY

Selling Direct to Consumer.
NEW ACCOUNTS SOLICITED.

Amory, Browne & Co.

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Cotton Mercerized Tapes, Spool Tapes, Bindings and Narrow Fabrics for Underwear and other Trades.

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Successors to A. D. SALKELD & BRO., Inc.

ALL NUMBERS COTTON MERINO **YARNS** ALL COLORS WOOL WORSTED

366 BROADWAY, NEW YORK

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DRY GOODS

COMMISSION MERCHANTS

43-45 WORTH STREET, NEW YORK

J. H. Separk, Sec'y and Treas. J. L. Gray, V. P. and Gen'l Supt. Mills at Gastonia, N. C., Lincolnton, N. C.

Trade Marks—and Yarns

The five Trademarks shown here were created merely as a means of identification.

In a way, they resemble a man's business card; they are mere tools—outward "signs" of something else of far greater significance.

In themselves, they have played no part in the success and reputation of our yarns.

The underlying, fundamental reason for this success is to be found in a record of twenty years of service—twenty years of winning by sheer merit.

Today many men in the trade use these Yarns as standards. Other products are represented as "just as good."

Why not get the "standards" themselves?

We solicit your valued inquiries on:

Combed Peelers 30s to 80s, single and ply.
Combed Sea Island (gassed and ungassed) 30s to 80s, single and ply.
Carded Peelers 40/1, 50/1, 60/1, and 60/2.

Spinners and Doublers of fine combed and gassed yarns.

Our Products are Sold Direct Through Our General Sales Offices
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GRAY DAWN QUALITY YARNS Gray Manufacturing Co. Gastonia, N.C.

COTTON YARNS ARROW MILLS INC. GASTONIA N.C.

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ARLINGTON COTTON MILLS COTTON YARNS GASTONIA, N.C.

Holland Aniline Co.

HOLLAND, MICH.

Manufacturers of

Sulphur & Basic Colors

Announce the appointment of

Dicks, David Co., Inc.

299 BROADWAY, NEW YORK

AS THEIR SALES AGENTS.

Established 1870 *Incorporated 1890*

The Warren Soap Manufacturing Company

77 Summer St. Boston, Mass.

DEPENDABLE PRODUCT SERVICE

SAMPLES of our products with dyeings sent on request. We want the goods to speak for themselves.

DYEING PROBLEMS SOLICITED. We offer the services of our experts and our ample facilities at our factory and City Laboratories for the solution of your difficulties in dyeing.

We manufacture the following:

ESSEX CHRYSOPHENINE

ESSEX DIRECT YELLOW G
Fast to acid and light.

ESSEX DIRECT YELLOW 2G
Leave silk white in dyeing union goods.

ESSEX DIRECT ORANGE R

ESSEX DIRECT YELLOW CF
Fast to alkali, acid, chlorine and light.

ESSEX DIRECT PINK
Yellow shade of pink, very fast to acid. Dyes union goods.

ESSEX DIRECT ROSE
Fast to acid and alkali.

ESSEX SULPHUR BROWN R
Red shade sulphur brown. Very fast to light. Penetrates well when dyed in a vacuum machine.

ESSEX SULPHUR KHAKI A
Dyes very level. Unusually good for dyeing cotton piece goods, as it does not require after-treating to oxidize or increase the fastness to light.

ESSEX SULPHUR OLIVE A
Very fast to light.

ESSEX CHROME GREEN B
For dyeing wool. Leaves silk white on cross dyeing.

ESSEX DIRECT BLUE 2 B

ESSEX ANILINE WORKS, Inc.

39 Oliver Street,
BOSTON

Works at
South Middleton, Mass.

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Textile Mills Should Learn

The special starch their mill requires, and then have it made to order by Douglas Starch Experts.

Our knowledge of the Starch business co-ordinated with your knowledge of the Textile business will produce wonderful results—results which not only help increase output, but will reduce manufacturing cost.

A call from one of our experts does not obligate you in any way. It is simply your opportunity to learn what we offer in the way of special service—

—a service which other mills are now profiting by with satisfaction to all concerned.

Appoint an hour and day for conference now.

Douglas Textile Starch

100 per cent pure **100 per cent results**

We make a complete line of standard mill starches. We supply all grades of modified starches, alkali thick cooking starches and all regular grades of neutral starches.

Each of these starches is free from gelatinized particles, crustings or other foreign substances.

Situated in the heart of the corn belt, commanding the best grades of corn where it is grown, it is only a step from field to factory, another to your mill.

DOUGLAS COMPANY, Cedar Rapids, Iowa

Manufacturers of Corn Products

Newbert Color Company

MANUFACTURERS OF:

COTTON SOFTENER
SOLUBLE OIL
SPECK DYE

INDIGO EXTRACT

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ACETATE OF CHROME
ACETATE OF ALUMINA

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VICTOR MILL STARCH

The Weaver's Friend

It boils thin—it penetrates the warps—increases breaking strength and carries the weight into the cloth. Being thoroughly washed free of gluten and other foreign matter it gives a bleach and finish to the goods that you can get from no other starch.

A trial order will convince you that VICTOR STARCH has no equal on the market.

THE KEEVER STARCH COMPANY, Columbus, Ohio

Southern Agent: MR. JAMES H. MAXWELL, Greenville, S. C.

If you are not already using VICTOR STARCH call on our representative for a demonstration at your convenience.

DU PONT AMERICAN INDUSTRIES

DU PONT DYESTUFFS

What the Ending of the War Means to Our Industry

For more than four years the manufacturing powers of our industries have been almost entirely absorbed in meeting the demand for munitions of war.

As the world's largest manufacturers of explosives our responsibilities have been great—how great may be judged when it is known that since the outbreak of the war—a war in which the quantity of men, munitions and equipment employed, staggers the imagination—we have been the principal source of explosives not only for this country but for our allies.

With the ending of the war that task is done. From now on our entire resources—men, capital and manufacturing facilities—will be devoted to the making of munitions of peace—to the greater task of winning for America's industries a foremost place in the world reconstruction era that is now beginning.

In our dyestuffs industry, the release of labor from our munitions plants, the availability of men trained in the closely allied explosives industry, hiterto unavailable supplies of crudes and intermediates and the possibility of needed extensions in our plant facilities, assure from now on rapid and satisfactory development.

Du Pont Dyestuffs Works

Owned and Operated by E. I. Du Pont de Nemours & Co.

WILMINGTON, DELAWARE

The Du Pont American Industries Are:

E. I. du Pont de Nemours & Co., Wilmington, Delaware, Explosives.
Du Pont Chemical Works, New York, N. Y., Pyroxylin and Coal Tar Chemicals.
Du Pont Fabrikoid Co., Wilmington, Delaware, Leather Substitutes.
The ArlingtonA Works, 725 Broadway, New York, N. Y., Ivory Py-ra-lin and Cleanable Collars.
Harrison Works, Philadelphia, Pa., Paints, Pigments, Acids and Chemicals.
Du Pont Dye Works, Wilmington, Delaware, Coal Tar Dyestuffs.

DU PONT

ZAVON

The Textile Solvent.

ZAVON is a solvent for the textile industry. It can be used on all kinds of animal and vegetable fibre with absolutely no injurious effect on the fibre or the receptacle in which it is used.

The knit goods trade particularly are constantly troubled with oil spots, dirt and graphite, some mills getting as high as 30% spots in hosiery, while the underwear manufacturer is almost as badly off.

Soap will remove light vegetable oils, but is not satisfactory for the mineral oils and is worse than useless on graphite.

Zavon is the natural solvent for such foreign matter. It contains one of the most powerful solvents known, and its action on fats, oils, and waxes is almost instantaneous. Zavon will reduce your spot account 99% at a very slight cost. It gives a better hand and body to the goods than any other similar product in use today and the unevenness of shade to the finished dyed fabric due to improper circulation and penetration is reduced to a minimum where Zavon is used in the preparatory treatment.

We shall be glad to furnish a sample for trial on request.

ZAVON, Inc.

413 Baltic Street, Brooklyn, N. Y.

Manufacturers.

"AMALIE" 50% SPECIAL SULPHO TEXTOL OIL

Will Greatly Reduce Your Manufacturing Cost!

in the Softening or Finishing Processes of Cotton Goods. Just as Efficient, but More Economical than Costly Sulphonated Castor Oils.

"AMALIE" 50% SPECIAL SULPHO TEXTOL OIL

is Clear Soluble in Water

Barrel Cheerfully sent on APPROVAL

L. SONNEBORN SONS, Inc

262 Pearl St., New York, U. S. A.

Textile Department

UCPC

United Chemical Products Corporation

Importers, Exporters and Manufacturers

York and Colgate Streets, Jersey City, N. J.

SULPHUR COLORS

Acid Colors	**Sumac Extract**
Direct Colors	**Logwood-Hematine**
Basic Colors	**Gambier-Fustic**

Soluble Oils, Textile Soaps, Gums, etc., for Weighting, Softening, Finishing and Waterproofing all Fabrics, Turkey Red Oils, U. C. Tallow 98% Fat, Cream Tallow, U. C. Special Sizing and Special Sizing for Government Work, U. C. Gum A and Special Softener for Hosiery Mills.

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Grasselli Sulphur Black
(Powdered Extra Concentrated)
Brilliant Sulphur Blue GCR
Brilliant Sulphur Brown GR
Sulphur Khaki 21

Bichromate of Soda
Sodium Sulphide
AND OTHER CHEMICALS FOR
TEXTILE MANUFACTURERS

Manufactured and For Sale by

THE GRASSELLI CHEMICAL CO.

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The GRASSELLI CHEMICAL CO., Limited
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SOLE SELLING AGENTS FOR
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SULPHUR BLUE

Can Make Immediate Deliveries Send for Product Sample and Full Particulars

Starch

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400 Mill C. P. Special 500 Mill. Famous N.
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These STARCHES are manufactured by carefully controlled and standardized methods.

PURITY and UNIFORMITY are secured by accurate laboratory tests.

ECONOMY and EFFICIENCY are proven by the constantly increasing number of exacting cotton manufacturers who are getting satisfactory results by using our STARCHES especially selected for their conditions.

Recommendations are based upon intelligent investigation of each individual problem.

Corn Products Refining Co.
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Starch

B. & L.

Anti-Chlorine Bleaching Process

FOR COTTON

Simple
Scientific
Safe

BOSSON & LANE
Works and Office, Atlantic, Mass.

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Manufacturers of

DYESTUFFS AND CHEMICALS
SULPHUR BLACK
SULPHUR OLIVE DRABS

Works at Rensselaer, N. Y.

OFFICES:

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MONOPOLE OIL

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Special Sizing and Finishing Products for Cotton, Wool and Silk.

CREAM SOFTENER	SULPHUR BLACK
SOLUBLE OILS	LEVULINE
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New York Office: 100 William Street.
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DYES LEVINSTEIN DYES

DYE STUFFS

MILLIONS OF MEN in the ALLIED and AMERICAN ARMIES and NAVIES have been clothed and equipped with materials dyed with LEVINSTEIN DYES.
No requirements are more strict than Government tests.
The organization that took care of this unprecedented demand for military colors can now give equal service in attending to civilian needs.
Our line rapidly becomes more comprehensive; our ability to serve more pronounced.

I. Levinstein & Co. Inc.

74 INDIA STREET, BOSTON, MASS., U. S. A.

We specialize in dyes made in England by Levinstein, Ltd., and in America by E. I. du Pont de Nemours & Co.

COUPON Check in Square and Mail	
We are users of Dyes for Cotton	
We are users of Dyes for Wool	
We are users of Dyes for Silk	
We are users of Dyes for Leather	
NAME	
ADDRESS	

DYES LEVINSTEIN DYES

Alizarine Blue R B

For Printing

Navy-Blue Shades

(Fast to light and washing)

Developed with acetate of chrome in the thickening paste.

Chrome Yellow Chrome Orange

Chrome Brown (Paste)

Chrome Blue Black

(Fast to light and washing)

These Colors are also for printing on Cotton.

We manufacture an extensive line of other Aniline Dyes and Intermediates.

Marden, Orth & Hastings Corporation

(Established 1837)

136 Liberty St., New York City

Boston Chicago
Philadelphia Seattle
Cleveland San Francisco
Cincinnati

DELAHUNTY Dyeing Machiner

THE first revolving cylinder dyeing machine made and operated in this country was manufactured by the Delahunty Dyeing Machine Company. Since the year 1880 we have given to the textile industry many superior machines for dyeing, bleaching and oxidizing raw stock cotton, waste stock, linters and articles of knitted construction.

In our circulating machines, sulphur and cold vat colors are dyed with perfect success. The Brandwood System of dyeing warp on beams, as used in the works of the Elton Cop Dyeing Co., of Bury, England, has been delegated solely to this establishment for the manufacture and sale in the United States. This machine will dye at one operation one to twelve beams of indigo, hydron, indanthrene and other oxidation colors, besides possessing other valuable features which aid production and lower the cost of dyeing.

The machines of our manufacture of greatest import to the textile industry are:

Revolving Cylinder Raw Stock Dyeing Machinery.

Revolving Cylinder Hosiery Dyeing and Bleaching Machines.

Hosiery, Oxidizing and Tom Tom Machines.

Special machines are made for aniline, sulphur, indigo and other vat colors.

Delahunty Dyeing Machine Company
Pittston, Pa.

COCKER
INDIGO DYEING MACHINE FOR WARPS

Machine illustrated above shows our Indigo Vat with balling attachments for handling eight warps.

With two additional balling attachments this machine has a capacity of twelve warps.

Correspondence solicited.

Cocker Machine & Foundry Company
Builders of Warpers, Beamers, Warp Dyeing Machines and Reels
GASTONIA, N. C.

Dicks, David Co. Inc.

Especial attention is now directed to our

HOLLAND SULPHUR BLUE

A full, rich, bloomy American blue that must be seen to be appreciated.
Samples of commercial mill dyeings will prove our contentions.

ALSO

Holland Sulphur Green
Holland Sulphur Dark Brown
Holland Sulphur Yellow Brown

Brilliant Sulphur Green B
Sulphur Yellow G Concentrated
Primuline Concentrated
Methelin Blue
Methyle Violet

All Direct Colors

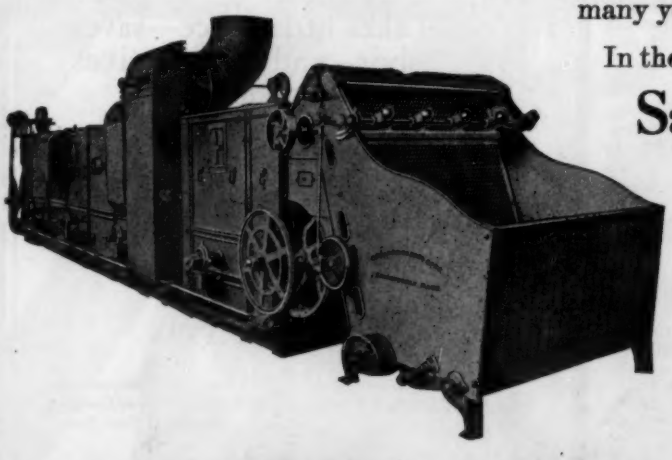
BEN R. DABBS, SOUTHERN MANAGER

Charlotte, N. C.
Main Office, 299 Broadway, New York City

Charlotte, N.C.

SARGENT DRYERS mark progress in Dryer Development comparable to that made in other fields of mechanical endeavor.

They are favored with a natural preference because they are designed on basic principles of air circulation, conveying, and general drying apparatus construction, which have had the approval of discriminating mill men and drying engineers for many years.



In the

Sargent Dryer

these principles have been combined and refined, making a complete machine which is unexcelled.

For drying cotton, linters, wool, hair, flax and other classes of raw material.

C. G. SARGENT SONS Corp., GRANITEVILLE MASS.

FRED H. WHITE, Southern Agent, Charlotte, N. C.

Proctor Questionnaire

Please answer these questions, tear out, and send to us. We will study your conditions and attend to your needs promptly:

(1) How are you now drying your wool, cotton, yarn, cloth, or other stock?_____

(2) How much are you drying per hour?_____

(3) How much would you like to dry per hour?_____

(4) What is the percentage of moisture before and after drying? _____

(5) What troubles do you have, if any?_____

_____

_____

(6) What is the present drying temperature?_____

(7) Are you crowded for space?_____

(8) How is the material handled to and from the dryer? _____

_____

(9) How many men are you employing in drying?_____

(10) What kind of steam are you using and how much?

_____

(11) Does material run in large lots of one kind or in small lots? _____

(12) How much power are you using for drying?_____

Should you in turn wish to ask questions about Proctor Dryers, we will gladly answer them. Make a questionnaire for us and we will furnish the answers and mail the blank back to you by return mail if possible.

We want you to know all about Proctor Dryers. They are as good as engineering science and human skill can produce. They are economical, compact, dependable, require minimum power for operation, and are built in any capacity. Our range of experience with drying problems is unequaled. We have specialized in dryers for every material for over 30 years.

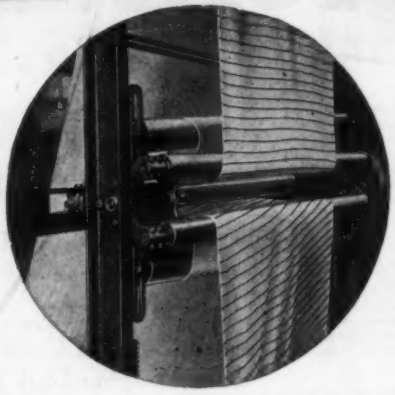
You are at liberty to take advantage of our experience without being placed under any obligation whatsoever. Even if you are well satisfied with your present drying system, we would appreciate answers to the above questions to have the information handy in our files. Too much money is being lost these days because of inefficient evaporating methods. We can and will help.

"Proctor" DRYERS

Philadelphia Textile Machinery Co.

Philadelphia, Pa.

1



A turn of the hand wheel straightens a crooked-runnimg weft. A boy or girl watches .

The "L. & L" Combination Weft Straightener and Compensator

(Patented)

while doing other work —only an occasional adjustment is required.

Takes little space—saves labor and time—gives better product.

Send for full information

H. W. BUTTERWORTH & SONS CO.

Established 1820

PHILADELPHIA

Providence Office: Turk's Head Building

Canadian Representative: W. J. Westaway Company, Hamilton, Ont., Can.

84

FINISHING Butterworth MACHINERY

FLETCHER WORKS

Formerly Schaum & Uhlinger

CENTRIFUGAL EXTRACTORS

The Fletcher Works Type "E" Electric driven Centrifugal Extractor illustrated is one of the most convenient made in the matter of power. Can be set up and operated wherever there is room enough to set it. Six sizes: 30, 36, 42, 48, 54, 60-inch baskets.

Prompt delivery.

In ordering say what current is available.

Fletcher Works

Glenwood Avenue and Second Street

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Representatives:

Eastern Agent:
A. J. Cady, 18 State Street, Troy, N. Y.

Western Agent:
R. R. Street & Co., 541 W. Washington Street, Chicago, Ill.

Southern Agent:
Stuart W. Cramer, Charlotte, N. C.

Southern Representative:
Howard Morshead, Glenwood Ave. & 2nd Street, Philadelphia, Pa.

Save *One-Half* Your Hosiery Pressing Costs

Every mill that has ever installed an American Rotary Press has saved money through its operation. We have cases on record where mills have written us that they save as much as 66⅔ percent on their labor costs in pressing.

Besides that, they do more work in less time with this press.

It stands to reason, therefore, that the American Rotary Hosiery Press will do the same in your mill—it will prove the same business investment for you, as it is for others. There is nothing complicated to figure out. If you can save the labor costs of from 6 to 16 men—it certainly will make a big difference in your pay-roll for that operation.

And that's what other mills are saving every day.

You don't need skilled labor to use the American Rotary Hosiery Press—you don't need big, husky men—as you do with the plate press. Boys or girls can do the work just as well, and at less cost.

Our representative is in your vicinity. He will be glad to call and give you detailed information, and to tell you how others are making extra profits with the American Rotary Hosiery Press. There will be no obligation involved.

Better write us today—while you have it in mind.

Also Manufacturers of the American Knit Fabric Ironer—Automatic Underwear Press—Hydro Extractor—Rotary Fulling and Dyeing Machines.

The American Laundry Machinery Co.

Specialty Dept. Cincinnati, O.

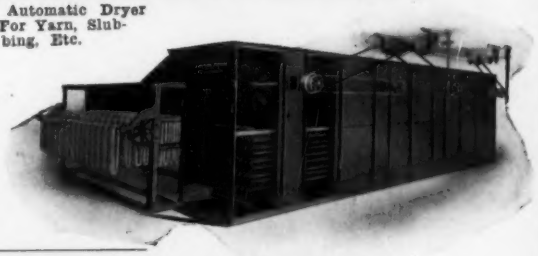
H. G. Mayer, Southern Textile Agent, Realty Building, Charlotte, N. C.

"HURRICANE" DYEING, DRYING AND FINISHING MACHINERY, PRESSES, ETC.

Circulating Dyeing Machine for Yarn

Complete
"HURRICANE"
Equipment for
Bleaching, Dyeing
and
Drying of Yarns
Reduce the Cost and Produce Better Quality Work
Write for Catalogs.

Automatic Dyer For Yarn, Slubbing, Etc.



A Hurricane Dryer for every material

THE PHILADELPHIA DRYING MACHINERY CO.
MAIN OFFICE AND WORKS STOKLEY ST. ABOVE WESTMORELAND, PHILADELPHIA, PA.

Liquid Chlorine

THE ONLY 100% BLEACH

It is a highly purified and specially prepared chlorine gas. By refrigeration and compression, it is liquified and placed in steel cylinders containing 100 lbs. When released from the valve it immediately gasifies.

You need no material changes in your present method of bleaching to use Liquid Chlorine Gas. It is a very simple process and easy to handle. There is absolutely no loss in the preparation of the bleaching solution, and no sludge to dispose of. Less acid and less washing are required. Less water is used and no odor is apparent.

A chemical analysis of Liquid Chlorine shows it to be practically chemically pure chlorine gas. A good quality of bleaching powder contains 36% available chlorine, while Liquid Chlorine contains 100%.

1 pound of Liquid Chlorine is equal to 6 lbs. of lime. You will readily recognize how much money this will save you in both bleach and freight charges.

Our representative will gladly demonstrate Liquid Chlorine in your mill. Just ask us to send him. Write today for interesting booklet. A post card will do

ELECTRO BLEACHING GAS COMPANY, 18 East 41st Street, New York City

THE TEXTILE-FINISHING MACHINERY CO

MAIN OFFICE AND WORKS PROVIDENCE, R. I.
NEW YORK OFFICE 30 CHURCH ST

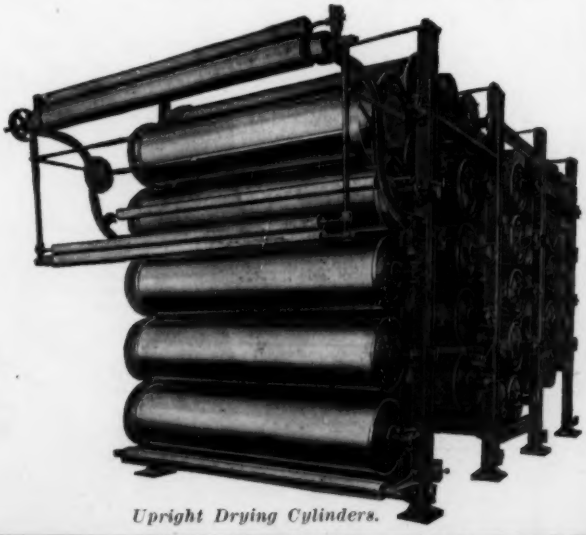
Singers
Kiers
Washers
Squeezers

Tenter Frames
Calenders
Starch Mangles
Dye Jiggs

Machinery
for
Bleaching, Dyeing, Drying, Mercerizing and Finishing Textiles and Warps

Scutchers
Water Mangles
Drying Machines
Bolt on Guider

Warp Dyeing Machines
Warp Mercerizing Machines
Warp Dryers
Warp Sizing



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